

UNITED STATES DISTRICT COURT
DISTRICT OF MAINE

CIVIL ACTION
Case No. 20-cv-00237-JDL

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ED FRIEDMAN,

Plaintiff

vs.

CENTRAL MAINE POWER,

Defendant

* * * * *

ZOOM DEPOSITION OF: DAVID O. CARPENTER, M.D.

BEFORE: Melissa L. Merenberg, RPR, Notary
Public, in and for the State of Maine, on January 13,
2022, beginning at 10:12 a.m.

APPEARANCES

Bruce M. Merrill, Esq.	For the Plaintiff
Christopher C. Taintor, Esq.	For the Defendant

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DEPONENT: DAVID O. CARPENTER, M.D.

EXAMINATION

PAGE

By Mr. Taintor

3

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EXHIBIT LIST

No. Marked	Description	Mentioned
1	Deposition Notice	16
2	CV	18
3	MPUC Testimony Part I	18
4	MPUC Testimony Part II	21
5	Reported Biological Effects from RFR	21
6	Reference List Filed with MPUC	21
7	Carpenter Report	36
8	Belpomme Article	81
9	Review of Environmental Health Article	84
10	McCarty Article	107
11	Falcioni Article	110
12	Folliart Article	112
13	Lai, et al.	-
14	Svendsen Study	116
15	National Toxicology Report	127
16	Yakymenko Article	94
17	Michigan PSC Testimony	-
18	USDC CT Deposition	-
19	Partial Transcript in Fay School Case	137
20	List of Testimony	45
21	Friedman Carpenter Email	43
22	Handwritten Notes	40

(This Zoom deposition was taken before Melissa L. Merenberg, RPR, Notary Public, in and for the State of Maine, on January 13, 2022, beginning at 10:12 a.m.)

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(Also present at the deposition were Ed Friedman and Tim Connolly.)

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(The deponent was administered the oath by the Notary Public.)

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DAVID O. CARPENTER, M.D., called, after having been duly sworn on his oath, deposes and says as follows:

EXAMINATION

BY MR. TAINTOR:

Q Good morning again, Dr. Carpenter. As you know, my name is Chris Taintor. We met a few minutes ago off the record. And you understand that we're here this morning to take your deposition in the case of Ed Friedman v. Central Maine Power Company?

A I understand, yes.

Q Great. And I know you've been deposed before.

By the way, did you produce today in response to the request on the deposition notice a list of cases in which you've testified as an expert witness within the past 10 years?

sense to you and requires clarification so that I can make sure that I ask you a question that you understand and you're only answering questions that you understand. Okay?

A Thank you.

Q And if -- you know, I think what we will probably do is take a break every hour or so, but if that doesn't work for you, if you need a break sooner than that, please feel free to let me know and we can take a break whenever you like. All right?

A Yes, I will.

Q And we will maybe plan on going a few hours. I don't know how long this will go, but if we -- if it goes for more than a few hours, we will take a lunch break and then resume after that. Do you have any time limits on your availability today?

A Not today, no.

Q Okay. Thanks.

So I understand that you are a -- you are a physician practicing in the specialty of public health medicine; is that correct?

A That's correct, yes.

Q And I understand that is somewhat similar to but different than the study of epidemiology; is that also true?

A Yes.

Q Great.

MR. TAINTOR: And, Bruce, can you make that available to me or --

MR. MERRILL: I thought I sent it out yesterday.

(Whereupon there was a break in the deposition at 10:16 a.m. and the deposition reconvened at 10:18 a.m.)

BY MR. TAINTOR:

Q Okay. So, Dr. Carpenter, you understand that the oath you have taken today is the same oath that you would take in a court of law?

A Yes, I do.

Q And you understand, I take it, that the testimony you give today can be used in proceedings both in this case and potentially in other cases?

A Yes, I do.

Q And you understand that if you give testimony today that you contradict at a later point in time, that contradiction is something that could potentially be pointed out to a judge or a jury?

A Yes, I do.

Q One of the things I would like to ask you to do, and I'm sure you know to do this, is to please let me know if at any time I ask you a question that doesn't make

A Well, epidemiology is one of the core components of public health, but I do not have a Ph.D. in epidemiology, and I usually do not consider myself to be an epidemiologist. Although, obviously, a lot of my research is using epidemiological methods and so forth.

Q So -- just so I understand, if you're saying that you would not consider yourself an epidemiologist, are there points on which you would defer to an epidemiologist in offering opinions in this case?

A Well, I guess the short answer is yes, but I think that even though I don't have a degree in epidemiology, I've worked in public health for so long, I teach epidemiology, so I understand epidemiology pretty well.

On the other hand, you know, in medical school, I had one hour of biostatistics and statistics is a very important part of epidemiology, and I'm quite weak in that area, so in that regard, I would defer to someone on questions especially on statistical significance of results.

Q On that point, let me ask you a little about bit about your familiarity with other expert witnesses who have been designated by the plaintiff in this case. There's a Dr. Paul Heroux; you're familiar with him?

1 A Yes, I am.
 2 Q Have you worked with Dr. Heroux on occasions?
 3 A I haven't worked directly with him. I know him quite
 4 well. I have traveled with him in several states,
 5 talking to state attorneys general on the MF issues.
 6 Q And MF issues, MF is an abbreviation for magnetic
 7 field?
 8 A Yes.
 9 Q And in what states have you and Dr. Heroux -- and by
 10 the way, is that how you pronounce it, Heroux or --
 11 A Heroux.
 12 Q Okay. It will be easier for me if I can call him
 13 Heroux.
 14 A That's fine with me.
 15 Q Okay. In what states have you traveled with Dr.
 16 Heroux to consult with attorneys general about
 17 magnetic field issues?
 18 A Definitely in California. I am not sure I recall the
 19 other states. I think we have been to three or four
 20 states, one was either Kansas or Nebraska. He was not
 21 with me here in New York. And I just don't recall
 22 which other states it was. I believe it was
 23 Washington D.C., which isn't a state, but the
 24 Government.
 25 Q We can agree that it should be, right?

1 A Yes, we can agree to that.
 2 Q So when you traveled to California with Dr. Heroux,
 3 can you give me a little bit more specifics about who
 4 you met with and what you talked about?
 5 A Well, we went to several state attorneys general
 6 offices basically arguing that, as with the tobacco
 7 settlements, state attorneys general had a major role
 8 in requiring tobacco companies to declare the hazards
 9 of smoking, and we were arguing that the EMF situation
 10 was very similar, that this was a hazard that
 11 reflected on individuals' health. We saw little
 12 action at the federal level, and we're urging state
 13 attorneys general to work together to hold the
 14 utilities liable for exposure to humans that we
 15 considered to be a threat to their health.
 16 Q And were you focusing on power lines or smart meters
 17 or both or neither?
 18 A We were focusing primarily on radiofrequency
 19 radiation, which would include smart meters, but many
 20 other sources of radiofrequency as well, including the
 21 roll out of 5G, but it was all exclusively
 22 radiofrequency not magnetic fields from power lines.
 23 Q You mentioned before that you taught or that you
 24 teach, I think, epidemiology. Is that at the
 25 University of Albany?

1 A Yes, that's correct.
 2 Q And do you teach a full course on epidemiology?
 3 A Not -- not a course that's called epidemiology, but
 4 epidemiology is such a core discipline of public
 5 health, the courses I regularly teach are global
 6 environmental health policy and environmental
 7 physiology, where we're talking about environmental
 8 threats to the health of individual organ systems in
 9 the human body. And the evidence for those
 10 environmental threats and this, of course, is not
 11 exclusive to electromagnetic fields, but chemical
 12 exposures and so forth as well -- ionizing, as well as
 13 nonionizing radiation. So in almost all of those
 14 situations, the studies that I'm presenting to the
 15 students, the studies I'm assigning to students to
 16 report on are epidemiological studies.
 17 Q Do you -- do you instruct students in how to properly
 18 assess the validity strengths of epidemiological
 19 studies?
 20 A Absolutely, that's a major point of this kind of
 21 instruction, to teach students to be critical, to not
 22 just accept results, but to look in detail at the
 23 strength of the evidence that supports whatever
 24 conclusion the authors are making.
 25 Q Are there particular resources, either books or

1 electronic resources, that you provide to your
 2 students to support your instruction on those matters?
 3 A Not really. I -- I find -- I don't find any textbook
 4 to be adequate for these kinds of lectures. So what
 5 I -- I use are publications in the peer-reviewed
 6 literature for both the basis of my lectures and the
 7 assignments I give to my students.
 8 Q You maintain syllabi for those courses that you teach?
 9 A Yes.
 10 Q Would you be willing to provide those to me?
 11 A Sure.
 12 Q Thanks.
 13 What was the outcome of your discussions with the
 14 attorneys general or someone from the attorneys
 15 general office in California?
 16 A Well, I think the outcome was while there was a lot of
 17 interest in the issues, we had a very good reception
 18 with a number of people on the attorneys general
 19 staff, but I don't think that anything really came of
 20 this. We were asking that the attorneys general of
 21 different states work together on this issue, and
 22 these were quite different states, some very red
 23 states, some very blue states. And we never did see
 24 any concerted action to -- from the attorneys general
 25 to organize a common action.

1 Q Did you create any documents, whether correspondence,
2 memoranda, anything like that, that you provided to
3 the attorneys general as part of that effort?
4 A I did not personally. There -- the woman that headed
5 this, Dafna Tackover, certainly did provide documents,
6 but I never had them myself. They were review
7 articles and the sort of thing that I have, but I
8 don't recall which ones specifically she provided to
9 me.
10 A major document always was the BioInitiative
11 Report for which I was the co-editor in chief, which
12 is an encyclopedic listing of research in this area,
13 but we provided other documents, as well, and I just
14 don't recall what those were.
15 Q Forgive me, is Dafna a man or a woman?
16 A It's a woman. She's a lawyer originally from Israel,
17 but has joint U.S. and Israeli citizenship. She's --
18 yes, she's been very involved in this issue. She
19 personally is sensitive to radiofrequency fields and,
20 therefore, this is a major cause for her.
21 Q Do you know how to spell her name?
22 A Yes, D-a-f-n-a is her first name, Tackover,
23 T-a-c-k-o-v-e-r, I believe.
24 Q Okay. And is she affiliated with any particular
25 institutions in the United States that you're aware

1 of?
2 A She was affiliated with the Children's Health Defense,
3 although she is no longer affiliated with them.
4 That's an advocacy organization that is one of the two
5 organizations that were the lead in the ongoing
6 litigation against the Federal Communications
7 Commission. She apparently had a falling-out with
8 other staff there and so she left that organization
9 some time ago.
10 Q Okay. And on any of your visits to California or any
11 other states to try to talk with state attorneys
12 general, did you testify before any commission or
13 agency or committee of the government?
14 A No, we did not, other than just the back and forth at
15 the meetings with these attorneys generals and their
16 staff.
17 Q And just to be clear, as far as you know, none of the
18 jurisdictions whether they be a state or District of
19 Columbia adopted any of the policies that were being
20 espoused by you or Dr. Heroux; is that true?
21 A That's correct.
22 Q So I don't know if I remember how we got started down
23 this road, but I guess we were -- let me ask you a
24 little bit more about your professional history. I
25 understand that, although you have a medical degree,

1 you've never practiced clinical medicine?
2 A That is correct.
3 Q Are you actually licensed to practice medicine in any
4 jurisdiction?
5 A No, I am not.
6 Q Have you ever published any article or study or
7 publication of any kind on the subject of
8 Waldenstrom's macroglobulinemia?
9 A No, I have not.
10 Q Apart from -- in connection with this case, have you
11 ever conducted any research in or pertaining to
12 Waldenstrom's macroglobulinemia?
13 A No, I have not specifically on Waldenstrom's
14 macroglobulinemia. That disease is one of the
15 multiple Non-Hodgkin's lymphomas, and I have been
16 involved in other legal cases on Non-Hodgkin's
17 lymphoma and environmental exposures. I don't think
18 I've published specifically on Non-Hodgkin's disease,
19 but I am very much involved in the study of it.
20 Q And what other cases have you testified on matters
21 involving Non-Hodgkin's lymphoma?
22 A Well, a number of cases with exposure to PCBs as a
23 risk factor for Non-Hodgkin's disease. Those were all
24 cases directed at Monsanto. I'm currently involved in
25 similar cases, but with Roundup and Glycel, which is

1 also a risk factor for Non-Hodgkin's disease.
2 But Waldenstrom's is a fairly rare disease, and
3 in none of those cases have I focused specifically on
4 the components of Non-Hodgkin's.
5 Q Have you ever testified in any other case involving
6 exposure to radiofrequency emissions in a patient or
7 person suffering from Waldenstrom's?
8 A No, I have not.
9 Q Prior to your involvement in this case, had you heard
10 of Waldenstrom's?
11 A Yes, I had.
12 Q And, again, I'm sorry if I -- I am just asking you the
13 same question in a different way. In this particular
14 case, in any of the research that you've done, have
15 you identified any study, literature of any kind, that
16 addresses specifically the risks to a person with
17 Waldenstrom's from exposure to RF emissions?
18 A No, I have not.
19 Q Are you being compensated for your time in this case?
20 A No.
21 Q You're just being paid expenses essentially?
22 A That's correct.
23 Q And I take it that's because you -- well, why don't
24 you tell me -- instead of me making assumptions, why
25 don't you tell me why it is that you choose to do this

1 work without compensation?

2 A Well, the issue in this case is not one where there's

3 going to be a lot of -- of settlement funds. This is

4 an area I know very well. It's not an area that I

5 have to spend a lot of time doing extra work. I

6 certainly -- I have a general principle of never

7 accepting expert witness fees myself. I do charge in

8 most cases and use that money to support my students

9 and staff.

10 But in this case, Mr. Friedman's not asking for

11 millions of dollars in compensation, and I have no

12 intention of charging, except expenses if it comes to

13 that.

14 Q Did you -- were you engaged on behalf of Mr. Friedman

15 when you testified in the Maine Public Utilities

16 Commission case?

17 A I don't actually know the answer to that question, but

18 I think the answer is no. I have been involved in

19 issues in Maine for a long period of time, but that

20 was primarily providing testimony to the State

21 Legislature. I did meet Mr. Friedman on one of those

22 occasions, but it was not primarily Mr. Friedman. I

23 was taking the initiative.

24 Q In connection with the testimony you gave in the Maine

25 Public Utilities Commission case, did you get hired by

1 a lawyer or somebody else to provide expert testimony?

2 A I actually don't recall.

3 Q Did you -- do you recall working with a lawyer name

4 Bruce McLaughlin?

5 A Bruce who?

6 Q Bruce McLaughlin?

7 A Yes, I do recall him.

8 Q Did he engage you?

9 A I suspect so, but I don't actually recall.

10 Q I think one of the categories of documents that was

11 requested in your deposition notice was all documents

12 reflecting communications between you and Friedman or

13 his counsel during the pendency of the Maine Public

14 Utilities Commission case bearing docket number 2011-

15 262. Do you recall seeing that?

16 A No, I don't.

17 Q Do you have Deposition Exhibit 1 in front of you

18 today?

19 A I'm sorry?

20 Q Do you have Deposition Exhibit 1, the deposition

21 notice, in front of you today?

22 A Yes, I do.

23 Q Can you take a look at that, please?

24 A I have it now.

25 Q Okay. So -- and I know that you've sent some

1 materials I'm going to get when we have a break here,

2 but you will see paragraph 4 on page 2 of Exhibit 1

3 asks for those communications that I just described.

4 Do you see that now?

5 A Yes, I do.

6 Q Did you engage in any search of your files to

7 determine whether such communications existed?

8 A I don't think any communications do exist there,

9 although I must say I didn't search very

10 systematically. I just didn't recall any

11 communications, therefore, and didn't go searching.

12 Q So I believe, and I could stand corrected, but I

13 believe Bruce McLaughlin was Mr. Friedman's counsel in

14 connection with that matter. And I think you told me

15 a moment ago that you believe that Mr. McLaughlin --

16 you think Mr. McLaughlin may have been the person who

17 engaged you. Do you -- assuming that's the case, do

18 you think it's likely that you would have had some

19 written communication with him or with Mr. Friedman?

20 A I probably would have, but I would almost certainly

21 have deleted it.

22 My -- if you've received my list of depositions

23 and testimonies, that case should be listed there and

24 probably lists Bruce McLaughlin, as well. I just

25 didn't recall the details of that, and I guess I

1 should have paid a little more attention since that

2 was Maine.

3 Q Okay. Well, we'll circle back to that. I don't need

4 to spend a whole lot of time on it now.

5 Now, I -- taking a look at Carpenter Deposition

6 Exhibit 2, which I think was a CV, and it was just the

7 most recent one that I think I could find involving

8 you, which may have been back from the Maine Public

9 Utilities Commission case. Do you have a more updated

10 CV that you provided today?

11 A Yes.

12 Q And do you recognize Carpenter Deposition Exhibit 3 as

13 testimony that you provided in the Maine Human Rights

14 Commission matter -- excuse me -- Maine Public

15 Utilities Commission matter?

16 A Yes.

17 Q Did you also testify in person before the Maine Public

18 Utilities Commission?

19 A I don't recall.

20 Q You mentioned a moment ago that you said you thought

21 you had testified before the Maine Legislature. Do

22 you think that's accurate or do you think you were

23 referring to the Public Utilities Commission?

24 A It was never -- I never testified to the full

25 Legislature, but I did testify on more than one

1 occasion to one subcommittee. There was a member of
 2 the Legislature that was very interested in this
 3 subject, and I think she brought me to Maine on either
 4 two or three occasions to work with this legislative
 5 committee, but I certainly did not testify to the full
 6 Legislature.
 7 Q Do you recall the name of the legislator?
 8 A I don't at the moment. I may recall it if I -- as we
 9 go along.
 10 Q Do you recall the name of the subcommittee?
 11 A No.
 12 Q And about when do you think that happened?
 13 A Oh, probably 8 or 10 years ago.
 14 Q Do you think that was before you testified before the
 15 Maine Public Utilities Commission?
 16 A I don't recall.
 17 Q Do you have any records pertaining to your engagement
 18 to serve as an expert witness in the Maine Public
 19 Utilities Commission matter?
 20 A No.
 21 Q Do you know that for sure? I guess my question is,
 22 have you checked?
 23 A Well, I haven't checked.
 24 Q Okay.
 25 A I do have a folder on most cases, but my EMF cases

1 have been -- it's a minor part of the legal work I
 2 have been involved in, and I have not checked.
 3 Q Okay. Would you be willing to do that?
 4 A Absolutely. At a break. I have a file cabinet, and
 5 at a break, I can look.
 6 Q And is it likely that insofar as any correspondence
 7 exists between you and Mr. Friedman or between you and
 8 Mr. McLaughlin or between you and anyone else
 9 pertaining to the Maine Public Utilities Commission
 10 case, that material would be contained in the file
 11 cabinet that you just mentioned?
 12 A Well, a lot of emails would never get into that file,
 13 but any -- any written documents should be in that
 14 file.
 15 Q Do you save or preserve in any way folders of emails
 16 that you exchanged with lawyers or clients who engaged
 17 you in Public Utilities Commission cases?
 18 A Maybe on some occasions, but probably most of the
 19 time, no. The cases involving utilities are usually
 20 ones that don't involve money, and a lot of it is
 21 email traffic, which I simply delete.
 22 Q Okay. Would you be willing -- have you searched to
 23 determine whether you have any email communication
 24 with either Mr. McLaughlin or Mr. Friedman?
 25 A I know I do not because -- I haven't searched, but I

1 regularly go through my inbox and my deleted files and
 2 delete, delete, delete, just to keep ahead of things.
 3 Q When you were working in the Maine PUC case, did you
 4 still have the same email address that you have today?
 5 A Probably not. My university email was changed
 6 probably 10 years ago. I still occasionally receive
 7 emails at the old address, but I'm sure that it has
 8 changed at about that time one way or the other.
 9 Q Do you recall what that old email address was?
 10 A Yes, Carpent@uamail.Albany.edu.
 11 Q C-a-r-p-e-n-t at what?
 12 A Ua mail, u-a-m-a-i-l dot Albany dot e-d-u.
 13 Q Thank you.
 14 MR. TAINTOR: Why don't I just see if I can go
 15 take about a 30-second break to see if I can find the
 16 testimonial list. I will be right back.
 17 (Whereupon there was a break in the deposition at
 18 10:49 a.m. and the deposition reconvened at 10:50
 19 a.m.)
 20 BY MR. TAINTOR:
 21 Q I want to ask you questions, Dr. Carpenter, about some
 22 of the other deposition exhibits that I sent. So
 23 Exhibits 4, 5, and 6, I think, were all items that
 24 were associated with the testimony that you gave in
 25 the Maine Public Utilities Commission matter. Can you

1 tell me what these documents are?
 2 A I don't know that I have any of those documents. I am
 3 just looking right now at my list of testimonies. I'm
 4 finding every state except Maine.
 5 Q No, I'm sorry. These are the exhibits that I sent to
 6 Mr. Merrill yesterday and he sent to you, the
 7 deposition exhibits.
 8 A Oh, yes.
 9 Q So for -- so Number 4, for example, Carpenter
 10 Deposition Exhibit 4 is entitled, Reported Biological
 11 Effects from Radiofrequency Radiation at Low Intensity
 12 Exposure.
 13 A I'm sorry, you're looking -- I thought you were
 14 looking at the -- my deposition notice?
 15 Q No, I'm sorry. No, I'm --
 16 MR. MERRILL: These were the exhibits I sent you
 17 yesterday, David.
 18 THE WITNESS: Okay. All right. Yes.
 19 BY MR. TAINTOR:
 20 Q Do you have those? Can you pull those up?
 21 A What was the title of that? I have hard copies of
 22 most of these on my desk here.
 23 Q Reported Biological Effects from Radiofrequency
 24 Radiation at Low Intensity Exposure.
 25 A Okay. That's that long table?

1 Q The long table -- it's one of a couple of long tables.
 2 A Yeah, yeah, I do have that printed out somewhere.
 3 Q I just want to make sure we're talking about the same
 4 one. So is this a document that's been revised over
 5 time?
 6 A Well, I believe -- I believe that document came from
 7 the BioInitiative Report. I didn't recognize it, but
 8 I don't know where else it would have come from, but
 9 it's a listing of a whole variety of studies that are
 10 -- report biological effects at various intensities of
 11 radiofrequency radiation.
 12 Q Yeah. And is this something that you created?
 13 A No.
 14 Q I think you presented it -- do you recall presenting
 15 this to the Maine Public Utilities Commission back in
 16 2013?
 17 A I don't think this is anything I have seen before.
 18 Q You see at the top right-hand corner, it says
 19 Carpenter Exhibit B?
 20 A Yes.
 21 Q So I think this was attached to the testimony, the
 22 prefiled testimony that you gave in the Maine Public
 23 Utilities Commission matter?
 24 A That may be. This is certainly not something I
 25 assembled. I suspect this is one of the tables from

1 Does that appear to you to be the case?
 2 A Yes, I think that is -- let me pull up things in the
 3 Dropbox because I am having trouble following what
 4 you're asking about.
 5 Q Sure.
 6 A So this is Exhibit 5 there?
 7 Q No, I'm looking at Exhibit 6 now. I'm comparing 4 and
 8 6.
 9 A I think this is just a continuation of -- oh, this is
 10 different. Yes, again, this makes clear that this was
 11 prepared by Cindy Sage.
 12 Q So, for example, just to try to put a finer point on
 13 this, if we look at Exhibit 4 and you look at the
 14 eighth page of Exhibit 4, there is a reference right
 15 about in the middle of the eighth page to an article
 16 by an author named Repacholi; do you see that?
 17 A This was -- this is the fourth page you said?
 18 Q No, the eighth page of Exhibit 4.
 19 A Well, my -- this is all tipped on it sideways so it's
 20 difficult to read, but I know the articles by
 21 Repacholi, if that's what you're asking about?
 22 Q Well, here's what I'm trying to get at just so I can
 23 understand this better. The -- actually, why don't
 24 you tell me when you've found the eighth page of
 25 Exhibit 4. Do you have that now?

1 the -- the 2007 BioInitiative Report.
 2 Q Okay. And there's been a 2012 revision of the
 3 BioInitiative Report, correct?
 4 A That's right. I think this one -- actually, this one
 5 is probably from the 2012 version of that report.
 6 Q There are some 2010 articles listed here, for example,
 7 on the first page?
 8 A Yes.
 9 Q And is there a new -- a new revision of the
 10 BioInitiative Report being published currently?
 11 A No, there are some -- some additions added, but that's
 12 primarily things added that my co-editor, Cindy Sage,
 13 has put up on the website. She manages the website,
 14 but we have not assembled the full panel of people
 15 that were part of the 2007 and 2012 group.
 16 Q Looks like I made a mistake by printing two copies of
 17 this same document and calling one Exhibit 4 and one
 18 Exhibit 5, so I am going to skip over Exhibit 5 and
 19 ask you about Exhibit 6. And what this looks like to
 20 me -- this also says, David Carpenter, Exhibit B. I
 21 believe it's from the Maine Public Utilities
 22 Commission case. And I guess what it looked like to
 23 me, this sort of corresponds with Exhibit 4 in that it
 24 contains the same references, it lists them by author,
 25 as opposed to categorizing them by power density.

1 A No, I am on the sixth page apparently. Now I'm on the
 2 eighth page.
 3 Q Do you see about halfway down the middle of the page
 4 on the far right-hand column it says, Repacholi 1997?
 5 A Yes, I see that now.
 6 Q Okay. And now if we compare that to Exhibit 6, this
 7 one is a little easier because the references are in
 8 alphabetical order and there is another reference to
 9 Repacholi, a 1997 article, it gives a specific
 10 citation to a text called -- or to a journal called
 11 Radiation Research, Volume 147.
 12 A Okay. Here. All right. Let's start that again.
 13 You're talking now which exhibit?
 14 Q Exhibit 6.
 15 A Exhibit 6, right.
 16 Q And you see a -- this is in alphabetical order. What
 17 I'm really just trying to confirm is that the
 18 Repacholi article referred to in Exhibit 6 and
 19 identified as an article appearing in the Journal of
 20 Radiation Research is the same source that is referred
 21 to in Exhibit 4 that we talked about a moment ago; is
 22 that true?
 23 A I believe it is.
 24 Q There's just one Repacholi article from 1997 that
 25 you're familiar with that --

1 A Yes.

2 Q -- addresses this issue of lymphoma in transgenic

3 mice?

4 A That's correct.

5 Q I did not see, based on my review of this document,

6 which I think was submitted in connection with your

7 testimony in the Maine PUC case, any other references

8 to associations between RF emissions and lymphoma. My

9 question to you is, are you aware of any other

10 articles or do any of the -- do any of the articles in

11 Exhibit 6, as far as you're aware, address the issue

12 of the association between RF emissions and lymphoma?

13 A Not in mice, that's correct. There is one more recent

14 paper that is relevant -- I didn't include it in my

15 statement, but it's -- it's an article by Lerchi or

16 something like that, and it -- it was not on the

17 transgenic -- it was not on transgenic mice, but it

18 did involve radiofrequency exposure and an elevated

19 development of lymphomas in mice.

20 Q And is that an article that you produced in connection

21 with today's deposition?

22 A No, I did not.

23 Q Okay. Would you -- are you -- is it your testimony

24 that this article that you just referred to supports

25 your opinions or forms any part of the basis for your

1 opinions in this case?

2 A No, I think not and that would be true for the

3 Repacholi article, as well. I think the strongest

4 evidence is the study done by the National Toxicology

5 Program, which we will get to. The original Repacholi

6 study, this study by Lerchi, L-e-r-c-h-i, which was

7 published in 2005, sorry, that's 2015, those are small

8 studies in relation to the large, very extensive

9 National Toxicology Program study. So I think each of

10 these by themselves are interesting, they support an

11 association of the development of lymphoma, but

12 they're not nearly as powerful as the National

13 Toxicology Program study.

14 Q And when you say they're not nearly as powerful, can

15 you explain to me what you mean by the term powerful

16 and what your basis is for that testimony?

17 A Well, the number of animals in the studies were much

18 smaller. The duration of the exposure much longer.

19 And in both of these papers -- I didn't review the

20 Repacholi paper, but I knew it quite well, they --

21 they see associations. They see associations for

22 which there had not been previous suggestions that

23 there would be a positive effect. So, yes, they're

24 consistent with lymphoma being elevated by exposure to

25 radiofrequency radiation, but they are not nearly as

1 powerful a study as the National Toxicology Program.

2 Q I understand that you testified before the Michigan

3 Public Service Commission in 2012 in connection with

4 that state's implementation or rollout of advanced

5 metering infrastructure, correct?

6 A Right.

7 Q And was it your testimony in that case that the

8 Michigan Public Service Commission should not approve

9 the implementation of AMI because of the danger to the

10 public?

11 A That is correct.

12 Q And do you know what the outcome was of that

13 proceeding?

14 A I do not.

15 Q I believe in your testimony in that case you indicated

16 that approximately 5 to 10 percent of the population

17 shows symptoms of electromechanical hypersensitivity;

18 do you recall that?

19 A Well, that -- there is evidence in the peer-reviewed

20 literature suggesting that number. I certainly recall

21 not in that specific case, but I use that analogy or

22 that statement quite frequently based on results from

23 other people's studies.

24 Q And so what I'm trying to get at, is that -- that

25 testimony was about 10 years ago. Is your opinion

1 about the prevalence of electromechanical sensitivity

2 the same today as it was back in 2012, it's roughly 5

3 to 10 percent of the population?

4 A Yes, I think that's -- that's still my opinion. I'm

5 not aware of any really good study that has

6 systematically looked at a large population of people.

7 One of the problems is many people may be sensitive to

8 these radiofrequency fields and not realize the cause,

9 and there's good evidence, on the other hand, that

10 many people that are ill want to blame electromagnetic

11 fields and when they're brought into a place where

12 they can be studied, they do not demonstrate any

13 ability to identify a sensation in relation to the

14 exposure. So those numbers are really not well

15 documented in terms of what percentage of the

16 population exhibits these signs.

17 Q And the studies that you were talking about just a

18 moment ago where you find that people who want to

19 blame radiofrequency for their illness and then that

20 turns out not to be substantiated by the evidence are

21 what you refer to as provocation studies?

22 A Yes, that's correct.

23 Q And is the McCarty study the one that you think is

24 helpful in that regard?

25 A Well, it's one of the ones that I think that's

1 helpful. That was a study done the way it should be
2 done, but it's a study of one person, and it was
3 blinded in terms of whether there was exposure or not
4 exposure.

5 The other thing that makes that a little bit less
6 appropriate for expansion to this case is the -- that
7 was a study of magnetic fields from 60 hertz, electro
8 magnetic fields, not radiofrequency fields. But there
9 are a variety of things I like about that study. The
10 subject was a physician, obviously a reasonably
11 well-educated person. The -- the investigators really
12 did a very good blinded exposure. She didn't know
13 when things were off. She didn't know when they were
14 on. When they were on, she demonstrated symptoms like
15 headache or changes in heartbeat.

16 The other thing that's so interesting about that
17 -- the report and consistent with several others, that
18 what seems to be the most provocative are the rapid
19 ons and off, and that's particularly relevant to the
20 case of smart meters because the -- the radiofrequency
21 fields from smart meters are a sequence of bursts of
22 extraordinarily high intensity, but very brief
23 duration. And there's a building body of evidence
24 that smart meters are particularly provocative in
25 people that are electrosensitive, even in people that

1 symptoms.

2 In my publication on microwave illness, which I
3 know that you have there, I report on other people, a
4 husband and wife in California that were out of --
5 they were in Europe at the time a smart meter was put
6 on their house. They came back, they both developed
7 hypersensitivity, didn't understand what the cause
8 was, found it was the smart meter, had the smart meter
9 removed, the symptoms declined, but they remained
10 sensitive when they were in other circumstances than
11 their home to high fields.

12 Those are anecdotal. They don't constitute what
13 I would consider adequate documentation. The Lamech
14 paper, this is, again, self-reported symptoms, but in
15 issues like this, I try to look at the weight of the
16 evidence and I think the weight of the evidence is
17 consistent with there being something about smart
18 meters that is more likely to trigger symptoms in
19 sensitive people than just Wi-Fi or cell tower
20 stations, talking on the cell phone, and that sort of
21 thing.

22 Q So just to be clear, though, to make sure I understand
23 what you're saying, the evidence, as you understand
24 it, is that smart meters are particularly provocative
25 for individuals who are electromagnetically

1 were previously not electrosensitive and become
2 electrosensitive. And I think that my view, and I
3 wouldn't say that it's 100 percent established
4 scientifically, but I think it's these very rapid ons
5 and offs that are more provocative to people that are
6 electrosensitive than just the maintained fields.

7 Q So I want to try to break apart that last answer just
8 a little bit. I am probably not going to quote you
9 perfectly accurately, so please correct me if I'm
10 wrong, but I think one of the things you said was that
11 there is a building body of evidence that smart meters
12 are particularly provocative in persons who suffer
13 from electromechanical hypersensitivity; is that
14 correct?

15 A That's correct.

16 Q And what is -- can you identify the articles or
17 studies in that building body of evidence?

18 A Well, the one that is -- that was put up on my site
19 was the Lamech study. Let me see if I got the name
20 correct. Which was a study in Australia of where they
21 surveyed -- yes, smart meters were installed and there
22 were a number of complaints, and this one, Lamech,
23 basically collected information from a large number of
24 people and -- and it was the installation of the smart
25 meters that seemed to cause the development of

1 hypersensitive, which is roughly, as you understand
2 it, 5 to 10 percent of the population, true?

3 A True. I think probably the 5 to 10 percent may be a
4 bit high, it may be less than that, but there
5 certainly is a group of people that are sensitive.

6 Q And is there -- am I correct in understanding that
7 different people, in your opinion, are hypersensitive
8 to different frequencies of electromagnetic radiation?

9 A Yes, that is my opinion, and that's based on a 1991
10 study by this fellow Rea in Texas. It's one of the
11 few studies, provocative studies that, I think, really
12 did the study well. But he did find among those
13 people, this is a study in a blind situation so people
14 didn't know whether the fields were on or not. But he
15 did find that electrosensitive individuals differed in
16 which frequencies they were particularly sensitive to.

17 That study, you know, 30 years ago has not been
18 replicated by anybody and I would be much happier if
19 it had been replicated, but I think it is consistent
20 with the fact that some people are more vulnerable to
21 magnetic fields and electricity, others to various
22 frequencies within the radiofrequency spectrum.

23 And in that paper Rea states that quite clearly,
24 that electrosensitive people have specifically --
25 specific frequencies to which they respond.

1 Q So -- and does that hypersensitivity, in your opinion,
2 extend all the way from low frequency, say, 60 hertz
3 to the radiofrequencies of -- that are emitted by
4 smart meters?
5 A Yes.
6 Q So is it fair then to say that of the ballpark, 5 to
7 10 percent of people who are electromagnetically
8 hypersensitive, some fraction of those would be
9 hypersensitive to radiofrequency emissions at the
10 frequency emitted by smart meters, but that -- it
11 wouldn't be the whole 5 or 10 percent?
12 A That's correct. Again, that's not totally supported
13 by published papers, but that is -- that's how I see
14 the situation.
15 Q Is the -- you didn't cite the Rea article I see in
16 your study, is there a reason for that -- excuse me --
17 in your study, in your report, is there a reason you
18 didn't cite that as supportive of your opinion?
19 A No, there's not a reason I didn't cite that. I didn't
20 talk particularly about smart meters. Obviously,
21 there's a huge literature here that I have, what,
22 three file cabinets full of reports. And I -- I don't
23 cite everything that's perhaps relevant in the report,
24 but I think that is an important observation, and
25 that's an important paper.

36

1 Q Just to be clear, what -- what criteria did you use to
2 select the references that you included at the end of
3 your report, which is Exhibit 7?
4 A Well, I -- I focused a lot on the evidence that if you
5 have cancers of the hematopoietic system, that
6 exposure to radiofrequency radiation is likely to
7 reduce the interval of time when you are in remission.
8 Q Would you repeat that statement again so I understand
9 it?
10 A I focused on two publications that -- both dealing
11 actually with -- well, one dealing with
12 electromagnetic fields in the -- in the RF range and
13 the other in the radiofrequency range that show that
14 children with leukemia, if they're exposed to elevated
15 electromagnetic fields, the duration of their
16 remission of the cancer is reduced as compared with
17 children that are not exposed to electromagnetic
18 fields.
19 I think in this case with Mr. Friedman's
20 Non-Hodgkin's lymphoma, this is really one of the
21 major reasons why he is vulnerable under the Americans
22 with Disabilities Act to not have to pay extra charges
23 for having an analogue meter on his house.
24 So I wasn't trying to write the dissertation on
25 electromagnetic fields, but rather to focus on the

1 specifics of his case and particularly on this
2 question of whether continued exposure had a greater
3 risk for him than for other individuals.
4 Q Gotcha. So am I correct -- and, again, I'm trying to
5 condense and recap what you said and if I do it
6 incorrectly, please correct me, I'm sure you will. I
7 think you just said that you thought that the two most
8 important studies for purposes of this case are those
9 that pertain to the effect of RF exposure on children
10 with leukemia; is that correct?
11 A I think -- yes, that's partly correct. I think that
12 one of the really important questions in this case,
13 would exposure from a smart meter have an unusual
14 adverse effect on Mr. Friedman as compared with
15 someone that does not already have a case of
16 Non-Hodgkin's lymphoma?
17 Q Right.
18 A And these two papers, the Svendsen and the Foliart
19 studies demonstrate that children with leukemia, not
20 adults, but children with leukemia that are in
21 remission, they -- their duration of remission is
22 lower than it is for individuals that are not so
23 heavily exposed. And I think that that's also
24 relevant to Mr. Friedman's case.
25 Now, one of them -- I can never remember to

38

1 pronounce it right either, but that particular cancer
2 almost always individuals that develop it will go into
3 remission, and that remission will last for somewhere
4 between 5 and maybe 12 or 15 years, but that
5 particular form of Non-Hodgkin's lymphoma is
6 invariably fatal provided you don't die first of
7 something else.
8 You would hope that that duration of the
9 remission -- and from what I could read on
10 Waldenstrom's lymphoma, almost everyone that develops
11 it will ultimately die of that disease unless they die
12 of something else sooner. The duration of that
13 remission can be quite long.
14 But these two papers demonstrate that children
15 with leukemia, their period of remission is reduced if
16 they are exposed to elevated electromagnetic fields.
17 This to my mind is the major support for Mr. Friedman
18 not being penalized for keeping an analogue meter, not
19 a smart meter on his house because the greater the
20 exposure that he has to radiofrequency fields the
21 evidence would support that the shorter the period of
22 time he would be from his cancer.
23 Q Okay. And, again, to be clear, it's the Foliart and
24 the Svendsen articles that are the primary support for
25 that hypothesis, correct?

1 A That is correct.

2 Q And to go back and clarify because I think we've now

3 gotten away from this whole issue of hypersensitivity,

4 but I want to be clear whether we are or not. Do you

5 have any basis whatsoever for believing that

6 Mr. Friedman suffers from electromagnetic

7 hypersensitivity?

8 A I have no basis for drawing that conclusion.

9 Actually, I have never asked him, but I don't think

10 that's a major issue in this case.

11 Q It's not your contention, just so -- or not your

12 opinion, so I understand it, that he should be

13 accommodated in a particular way because he is

14 electromagnetically hypersensitive?

15 A No, that is not my opinion.

16 Q Have you reviewed any of his medical records?

17 A No, I have not.

18 Q Do you have any information at all about when or how

19 Mr. Friedman acquired his disease?

20 A No, I have no information on that.

21 Q Do you have any information at all about what his

22 symptoms are today or about how they have progressed

23 over the course of his lifetime and by that I mean his

24 symptoms related to his cancer?

25 A I -- I may have gotten some information from talking

40

1 with Mr. Merrill, possibly with Mr. Friedman, but I

2 don't have any real documentation of anything about

3 his -- when he developed the cancer, what his symptoms

4 are and so forth. All I know is that that's the

5 diagnosis that he has.

6 Q You referred to long periods of remission for people

7 with Waldenstrom's, do you know what -- for how long

8 Mr. Friedman has been in remission?

9 A I do not, no.

10 Q Did you make any notes of conversations that you had

11 either with Mr. Merrill or with Mr. Friedman in which

12 they conveyed to you information about Mr. Friedman's

13 illness or his symptoms?

14 A I do have one thing of notes. The only thing that I

15 have here is that his symptoms are fatigue and bone

16 and joint pain. But I am due to write a report by

17 November 1, but, no, I don't have anything more than

18 that.

19 Q Okay. And that's -- I'm sorry. Is that -- you're

20 referring to a page of handwritten notes and that is

21 -- is that the only page of notes that you have about

22 the case, period?

23 A Yes, it is.

24 Q Did you provide that information -- I assume you

25 didn't provide that document in response to today's

1 deposition notice?

2 A No, I did not.

3 Q Are you willing to provide that document?

4 A Absolutely. And I doubt you will be able to read my

5 writing, but I am certainly willing to provide it.

6 Q So we have been going for about an hour and a half

7 now. Do you want to take a little break and I can see

8 if I can pull up those documents that were provided

9 this morning?

10 A Sure. And I will see if I can find -- a file on the

11 Lamech case.

12 (Whereupon there was a break in the deposition at

13 11:28 a.m. and the deposition reconvened at 11:46 a.m.)

14 BY MR. TAINTOR:

15 Q Okay. Doctor, apart from your testimony before the

16 Maine Public Utilities Commission and the Michigan

17 Public Service Commission, have you testified before

18 any other state utility regulatory agencies on the

19 subject of the safety of smart meters?

20 A Yes.

21 Q Can you --

22 A So many that I keep forgetting who they were.

23 Q Okay. So maybe that's some of what I'll see in this

24 document once it comes through.

25 Let me ask you this question, has -- to your

42

1 knowledge, has any state utility regulatory commission

2 for which you have testified ever declined to

3 implement advanced metering infrastructure based on

4 the conclusion that it posed a danger to the public?

5 A Not to my knowledge, no.

6 Q Do you recall whether during the Maine Public

7 Utilities Commission proceedings you had any

8 information about Ed Friedman's medical complaints or

9 circumstances?

10 A No, I don't, but let me answer the other question. I

11 have a huge folder of the proceedings of that meeting,

12 which I had not reviewed before -- I had totally

13 forgotten about it, so I apologize for that. But I do

14 have a good bit of information, and it confirms that I

15 had thought Mr. Friedman himself was not

16 electrosensitive, but he had taken the lead in

17 organizing the action based on people that were

18 concerned about smart meters. He had a major lead in

19 doing this survey of a large number of people, and I

20 have the results of that survey here. Again, I had

21 not reviewed that information before this deposition.

22 Q Do you have any actual either written or email

23 correspondence with Mr. Friedman in that file, or is

24 it too big to review?

25 A I think the answer is yes. I certainly have

1 correspondence with Bruce McLaughlin. I do have
2 emails from Mr. Friedman, yes.
3 Q Okay.
4 A One.
5 Q Can you -- I'm sorry, what was the last thing you
6 said, sir?
7 A At least one. I think it's only one email from
8 Mr. Friedman.
9 Q And can you read that email into the record for us?
10 A Yes.
11 Q First of all, what's the date?
12 A March 20, 2013. This is a -- a long email.
13 Q Okay. Well, if it's multiple pages maybe I won't have
14 you read it all into the record. Maybe you could --
15 during the break perhaps, you can scan it and email it
16 to Attorney Merrill so he could or you could forward
17 it directly to all of us, if Mr. Merrill agrees?
18 MR. MERRILL: I would just like to take a look at
19 it first, Chris.
20 MR. TAINTOR: Sure.
21 MR. MERRILL: I have no idea what it contains.
22 MR. TAINTOR: Sure.
23 A Well, it looks like it was originally more than one
24 page, but I only have front and back copies. This is
25 comments and references and attachments from Diane

1 001, which I just wrote. The EXN questions are at the
2 bottom of the email. Thanks, Ed.
3 And then it goes -- describes several different
4 exhibits.
5 Q Actually, why don't we do this because Attorney
6 Merrill wants to see that, I don't want you to -- I
7 don't want you to read it until he's had a chance to
8 look at it. So if you could maybe at the break you
9 can send that to Attorney Merrill and then he can
10 decide whether he has any issues with it.
11 A Not a problem.
12 Q And can you just -- the one thing I guess is, can you
13 tell me whether -- is Attorney McLaughlin copied on
14 the email?
15 A No.
16 Q Any other attorneys that you're aware of or is that
17 just between you and Mr. Friedman?
18 A It appears to be just between Mr. Friedman and me.
19 Q Thanks. All right. So we'll clear that up at the --
20 A I will scan that and send that, plus my handwritten
21 notes.
22 Q That would be great. Thank you. And then we can
23 figure out what else is in that file. Maybe I'll -- I
24 don't know how we're going to do that. We will think
25 about that as we go along here.

1 So I have received the list of testimony from
2 Attorney Merrill. And I am going to have this scanned
3 and marked as a deposition exhibit. Before I do that,
4 let me go through -- I think I will start at the end
5 and go backwards in time. Do you have that in front
6 of you, sir?
7 A Yes, I do.
8 MR. MERRILL: Is this going to be Deposition
9 Exhibit 20, Chris?
10 MR. TAINTOR: If that's where we left off, that's
11 what I'll mark it as, sure. I haven't done that --
12 actually, let me do that while I'm sitting here.
13 BY MR. TAINTOR:
14 Q Okay. So the document that we're going to mark as
15 Deposition Exhibit 20 is a list of your prior
16 testimony and if we start at the end, the most recent
17 testimony, we see that as recently as a month ago you
18 testified in a case involving the Deepwater Horizon?
19 A That's correct.
20 Q Let's do it this way, instead of my going through all
21 of these one by one, if we start with the most recent
22 one, can you tell me what the most recent case is in
23 which you testified that involved alleged adverse
24 health effects from exposure to radiofrequency
25 radiation?

1 A I suspect that was the Kosrovani case, which I'm not
2 sure I actually recall the details on that. I believe
3 this was a man who was electrosensitive and wanted to
4 have, if I remember correctly, a cell tower moved away
5 from his apartment.
6 Q Okay.
7 A I have another file if you want to know more details
8 that I would have to check to be sure I am recalling
9 correctly. That's two years ago and --
10 Q Yeah. I understand memories fade.
11 A Before that there was testimony before the
12 Pennsylvania Public Utilities Commission.
13 Q Okay. Let me find that. Okay. That's -- all right.
14 That's Richard Myers v. PPL Electric Utility
15 Corporation?
16 A That's correct.
17 Q And that was -- you testified for the plaintiff, but
18 to be more accurate, there's probably no plaintiff in
19 that case, right? It was someone who is challenging
20 some action that was -- that the Pennsylvania Utility
21 Commission --
22 A That's correct.
23 Q -- some utility proposed to take?
24 A That's correct.
25 Q Do you recall, was that about smart meters or

1 something else?

2 A I don't recall. I have another file on my computer

3 that I could check if you want to know.

4 Then above that it's New Jersey. This one I do

5 recall because this was a case not involving smart

6 meters, but a high-voltage power line, that the

7 utilities wanted to put on a rail track that went

8 through a residential community. And we actually won

9 that case, and they refused to allow the construction

10 of that power line in the right-of-way of the

11 railroad.

12 Q And do you know whether that was because of

13 conclusions that were drawn concerning adverse health

14 effects from the power line?

15 A Yes, it was, and it was primarily my testimony, I

16 think, that moved that case.

17 Q Okay.

18 A You see most of my -- my cases involve PCBs and

19 Monsanto.

20 Q Right.

21 A Before that there was a case before the Michigan

22 Public Service Commission.

23 Q Before we go back to that, The Fay School case --

24 A Yes.

25 Q -- we have testimony here about that, that involved

1 Wi-Fi, correct?

2 A That's correct, yes. I skipped over that one, I

3 guess.

4 Q And actually before we move ahead, let me go back and

5 ask you about the Kosrovani case involving the cell

6 tower. Do you know what the outcome was of that case?

7 A I do not know.

8 Q Do you recall what jurisdiction that was in?

9 A If you give me a moment -- I'm sorry, I don't seem to

10 have any information in my file here.

11 Q That's fine. So we talked about The Fay School case

12 and then I think you have got a bunch of Monsanto

13 cases. I think -- oh, you mentioned the Michigan

14 Public Service Commission case, that's one we already

15 talked about, right?

16 A Yes.

17 Q And you understand that the Michigan Public Service

18 Commission approved the implementation of the advanced

19 metering infrastructure?

20 A Yes.

21 Q Okay. Prior to that, can we see -- can you find any

22 that pertained to radiofrequency emissions? And let

23 me interrupt you, is Florida BC v. Citizens for Safe

24 Technology such a case?

25 A Yes, that was a case. That was in British Columbia.

1 Again, I was qualified in that case, but we did not

2 win it.

3 Q Okay. And did that -- what technology did that

4 pertain to, if you recall?

5 A That was smart meters.

6 Q Okay. And then the Barnett case in Connecticut, I

7 believe that's one of your depositions that I have?

8 A Yes.

9 Q That was in Connecticut?

10 A Right.

11 Q Okay. And that was power lines?

12 A Barker is power lines.

13 Q Yeah.

14 A The Quebec case was smart meters. It was the

15 strangest experience I think I've ever had in a legal

16 situation because they officially disqualified me and

17 then said please testify, so --

18 Q Why did they officially disqualify you?

19 A I have no idea. It was really quite bizarre. The

20 impression they gave was they had already made up

21 their minds that smart meters were safe and they just

22 had to sort of give me the benefit of having traveled

23 up to Montreal to at least say my peace, but,

24 obviously, nothing happened there.

25 Q I'm sorry, you said you -- you said that smart meters

1 were rolled out notwithstanding your testimony in

2 Quebec?

3 A That's correct. That's correct.

4 Q Then AHM v. Morrison is Wi-Fi, correct?

5 A That's Wi-Fi, yes.

6 Q Any others here involving electromagnetic fields?

7 A The Cybart, et al. is magnetic fields, but, again,

8 I -- I just don't recall very much about that case.

9 Q Do you recall what jurisdiction that was in?

10 A I am not certain, but I think that was Pennsylvania.

11 Q Okay.

12 A But I don't recall.

13 Q Okay. Any others?

14 A Minnesota, that was a power lines case.

15 Q What was the nature of the dispute insofar as your

16 testimony?

17 A It's where the hydro power line would be routed,

18 whether it would go through a residential community or

19 more rural community. And I believe, in fact, they

20 did re-route the high-voltage power line.

21 Another Pennsylvania case, and I just don't have

22 any recollection of the details of that one.

23 Q Is that the Salt Creek Estates one you're talking

24 about?

25 A Before the Pennsylvania Public Utility Commission,

1 yeah, Salt Creek Estates. That's correct.
 2 Q Okay. You just don't remember that. Okay.
 3 A Passariello is also a Connecticut power lines case.
 4 Q I guess if we go back this far in time, we're probably
 5 not going to see too many smart meters cases there
 6 because --
 7 A That's correct because there weren't any smart meters
 8 back then.
 9 Q Okay. So the cases in which you have testified about
 10 smart meters are the Maine case, the Michigan case,
 11 any others?
 12 A I think I did testify in at least one of the
 13 Pennsylvania cases.
 14 Q Okay. And do you know what the outcome was there?
 15 A I don't think we won in any of those cases, except the
 16 one about the high-voltage power line and the railroad
 17 tracks.
 18 Q And a situation that's a little confusing to me, I'm
 19 just trying to understand the issue with the railroad
 20 tracks, so was there already railroad tracks and then
 21 there was just an effort to put a high-voltage power
 22 line adjacent to it?
 23 A That's correct.
 24 Q Okay.
 25 A But there were railroad tracks that went through this

1 residential community.
 2 Q And, again, I apologize if I have asked you this
 3 question and you have answered it, but you're not
 4 familiar with any jurisdiction -- are you familiar
 5 with any jurisdiction that has ever barred the
 6 implementation or rollout of advanced metering
 7 infrastructure on the ground that it poses an undue
 8 risk to public health?
 9 A That is correct. I am not familiar with any situation
 10 where that was the outcome.
 11 Q And other than in this case, have you ever testified
 12 in any case involving a claim by a particular
 13 individual that he or she was entitled to some
 14 particular accommodation for -- or disability laws
 15 because of the fear or the risk that exposure to RF
 16 radiation would cause him or her disproportionate
 17 harm?
 18 A Well, The Fay School case comes the closest to that.
 19 Now, that case basically was never totally settled.
 20 My testimony was accepted. I am not sure -- I don't
 21 understand the legal terms well enough to know, but
 22 there was not a decision. It was deferred, and there
 23 were questions of whether it would proceed in another
 24 fashion, which to my knowledge it has not. But that's
 25 the only other case where the health effects of

1 specific exposure to radiofrequency fields of an
 2 individual was -- was the object of the case.
 3 Q I thought I recalled, maybe correct me if you think
 4 I'm wrong or if you have different information, that
 5 in this case although the court assumed that such a
 6 thing as EMF hypersensitivity exists, the court
 7 concluded that there was insufficient evidence to find
 8 that the student in that case could trace his symptoms
 9 to Wi-Fi exposure; do you recall that being the
 10 outcome?
 11 A I don't actually know that -- I knew that it was not
 12 won, but not totally lost. And that's about all I
 13 know.
 14 Q Okay.
 15 A And I guess I should say that the Portland school case
 16 is also similar to that.
 17 Q Right, right, right. The BioInitiative Report, I
 18 think you mentioned before, is a document that you
 19 were involved in editing and also somewhat involved in
 20 writing, correct?
 21 A Correct.
 22 Q And how did the BioInitiative Report come to be?
 23 A Well, Cindy Sage was the power behind that report, and
 24 I worked with her closely, but she was the one that
 25 did the majority of the legwork on it. We, together,

1 discussed who would be invited to contribute chapters
 2 to it, but, again, Cindy did most of the work.
 3 The only part that I had a major role in writing
 4 was the public health chapter, which was then
 5 subsequently published as a peer-reviewed paper and
 6 reviews on environmental health. A lot of
 7 consultation by telephone, by email on specific
 8 issues, but the various chapters of the BioInitiative
 9 Report are for the most part solely the product of the
 10 authors of those chapters. We contemplated making it
 11 a document being published as a book. The logistics
 12 of having everybody's style being the same and so
 13 forth was such that we decided not to do that. So,
 14 again, each author did their own thing on their
 15 chapters.
 16 Q Yeah, I think taking a look here at -- I apologize. I
 17 am just not finding this as quickly as I wanted to.
 18 Was it Chapter 24 of the BioInitiative Report that you
 19 authored; is that the one you're talking about?
 20 A It's Section 17 of the 2007 version of the
 21 BioInitiative Report.
 22 Q And did that carry over to the 2012 edition?
 23 A Yes, it did, with minimal change.
 24 Q Okay. And what's Cindy Sage's background?
 25 A She is a master's level person, not in science, and I

1 think this was one of the main reasons that I was
 2 invited to be the co-editor and chief because Ms. Sage
 3 was not a doctor-level person, was not really trained
 4 in science and, obviously, I was.
 5 Q So what drove her interest in this effort?
 6 A I am not sure I really know the answer. She has a --
 7 she has a consulting company, but she certainly made
 8 no money on this report. And I think she just -- to
 9 the best of my knowledge, she just became convinced
 10 that this was a very major public health issue that
 11 was not being addressed by governments or
 12 international organizations and that there was a need
 13 to -- to develop an open-access document that provided
 14 the evidence for there being adverse biological
 15 effects of electromagnetic fields.
 16 Q So I am looking at Section 24 of the 2012
 17 BioInitiative Report entitled, Key Scientific Evidence
 18 and Public Health Policy Recommendations, and that
 19 appears to be co-authored by you and Cindy Sage?
 20 A Yes, that's sort of an expansion of the Section 17,
 21 2007 report.
 22 Q I see. Okay. And did you make certain
 23 recommendations there with respect to the use of or
 24 exposure to smart meters?
 25 A I don't have a hard copy of that in front of me.

1 Q Okay.
 2 A And I don't really recollect whether we specifically
 3 addressed smart meters.
 4 Q Okay.
 5 A I suspect we did, but I don't recall.
 6 Q Okay. Did you make recommendations or have you ever
 7 made recommendations for what you believed to be
 8 generally safe RF exposure levels?
 9 A Yes, we have recommendations in both the 2007 and
 10 2012, and this actually became somewhat of a little
 11 bit of a disagreement between Cindy Sage and me. The
 12 recommendation in the 2007 BioInitiative Report is
 13 that an appropriate goal -- and we did not use the
 14 word standard, but an appropriate goal would be 0.1
 15 microwatts per square centimeter. That's three orders
 16 of magnitude lower than most existing standards in the
 17 U.S. and other developed countries.
 18 In the 2012, Cindy wanted very much to push that
 19 down to 0.01 microwatts per centimeter squared. I
 20 objected to that and still object to that, although
 21 that's how it was published. What -- what we do add
 22 in both of these reports is a statement that there is
 23 no evidence that there is any safe level. The -- the
 24 lower levels were determined primarily by invitro
 25 studies of isolated cells, and, you know, there's no

1 disagreement on my part, but that there are biological
 2 effects from very, very low intensities of
 3 radiofrequency fields. The issue is how realistic is
 4 that to achieve in our modern world. And I think the
 5 0.1 was already a level so low it would be very
 6 difficult to include that as a standard and the 0.01
 7 would be almost impossible.

8 And that is -- that's what gave rise to that long
 9 list of studies, the disagreement between Cindy and
 10 me, not disagreement about the findings of the
 11 studies, but disagreement about setting something up
 12 that was so totally unrealistic to implement that I
 13 felt the .01 microwatts per square centimeter was
 14 difficult enough and that it would be wiser to leave
 15 it there.

16 Q You said a moment ago that there is no evidence that
 17 there is a safe exposure level. Is there any evidence
 18 that there is an unsafe exposure level?

19 A I'm sorry?

20 Q That there is an unsafe exposure level?

21 A There certainly is evidence that there are biological
 22 effects on isolated cells at very low exposure levels.
 23 There's a huge amount of evidence that there are
 24 unsafe levels, and those are the studies that deal
 25 with things like brain cancer, triggering the symptoms

1 of electrohypersensitivity. That level is certainly
 2 very, very much lower than the 10 microwatts per
 3 square centimeter that's the FCC standard.
 4 I think this is like a lot of other environmental
 5 exposures. What one has to do is balance risk against
 6 benefit. Certainly, I am not of the view that we'll
 7 ever go back to a wireless age. It's like the other
 8 things we accept. We accept air pollution, knowing
 9 air pollution is bad for us. We try to limit the
 10 magnitude of the exposure as best we can without
 11 causing such enormous harm to economic development
 12 that it's unrealistic.

13 So, again, these values, whichever one you choose
 14 from the 2007 to 2012 report, are -- are levels at
 15 which there is some evidence for adverse biological
 16 effects at least in isolated cells in a petri dish.

17 Q I'm sorry, you said at least in isolated cells in
 18 what?

19 A In a petri dish.

20 Q In a petri dish, yeah.

21 A But the levels at which there is a clearly defined
 22 adverse human health effect is higher than that, how
 23 much higher I don't think I can give you a number.

24 Q Okay.

25 A So I -- I stand by what we said in the 2007 report.

We have no evidence that there is any threshold below which there is no harm to something somewhere, but what we need to be doing is finding ways to use electromagnetic radiation in ways that benefit society at the same time that we minimize the adverse health effects to the best of our ability. Therefore, our guideline of 0.1 centimeter squared is an appropriate guideline, probably we will never be able to reach that to set it as a standard.

Q I am going to, again, go back and paraphrase something I'm sure inaccurately that you just said, so please correct me. I think you said that you cannot identify the exposure to radiofrequency radiation that would create an appreciable risk of harm to human beings. I'm not sure that's not exactly what you said. Can you tell me what you actually said?

A I think you almost got that right, but I think I could not identify an exposure level that was -- the boundary between safe and unsafe. That we cannot identify.

Q Do you believe it is above 10 microwatts per centimeter squared?

A I believe it's much below that, a much lesser exposure than 10 by -- by at least two orders of magnitude, but I don't think that the evidence for 0.01 microwatts

per square centimeter, I don't think we have good evidence in humans for disease at that level. We certainly have evidence for biological effects, at least in isolated systems at intensity exposures below that level.

Q So now, I'm confused, and I'm sure it's my problem, not yours. You believe the exposure level that creates an appreciable risk of harm to human health is above 0.1 microwatts per centimeter squared?

A That's not exactly what I mean. What I was trying to say is I don't think anybody has demonstrated a statistically significant increase in the human health risk at levels at -- as low as 0.1 microwatts per centimeter squared. We have seen biological effects, including some in humans. That evidence is not as strong as I would want it to be to use to setting a standard.

You know, let me explain what my view is on the basis of different things that are more related to my personal research. I have done a lot of work on exposure to PCBs, polychlorinated biphenyls, and I am often asked there, what is the boundary between safe and unsafe. EPA has standards, NIH has standards. World Health Organization has standards. But as we know the mechanisms of how these things act, what PCBs

do is they bind to what we know as nuclear receptors, and these nuclear receptors cause changes in gene expression. So I often say the boundary between having an effect and not having an effect is zero versus one molecule because one molecule will change the expression of some genes, clearly that's not enough to cause a human disease.

And I think that our evidence for electromagnetic fields is the same. Any exposure is going to have some biological effect. Biological effects don't always translate into a human disease or a hazard to people.

We know that these radiofrequency fields cause the generation of free radicals in reactive oxygen species, that's the mechanism. Now, we also know what free radicals in reactive oxygen species do, they damage proteins. They damage carbohydrates, and they damage DNA. That damage to DNA can be -- cause mutations, certainly can cause cancer and birth defects and a whole series of things.

Now, one radiofrequency photon may generate some reactive oxygen species, but it's not going to cause disease, but I see this -- very similar is the situation with PCBs. There are biological effects at any exposure, exposures we all get all the time

because of sun, because of AM and FM radio, from television, and so forth. But we're -- we cannot avoid exposure on this earth. But the greater the exposure, the greater the risk of developing these diseases, of developing cancer, of developing fertility problems, of developing electrohypersensitivity. And the threshold of exposure for any of those outcomes is going to vary somewhat from person to person depending on the genetic makeup and so forth.

But I do not believe that we will ever be able to define an exposure level that's the boundary between safe and unsafe. Therefore, the rational thing to do is to accept the fact that we cannot avoid exposure totally, but that there is a health hazard from exposure and, therefore, we should take steps to reduce our exposure to the degree we can, without major disruption of lifestyle. As I said, we're not going to go back to a pre-wireless age.

But in the case of smart meters, wired meters don't generate any radiofrequency radiation. We don't need to use wireless everything when we can have full access to the Internet. You know, smart meters were developed so that the utilities could reduce their personnel costs because you didn't have to hire

someone to go around and read the meters. There's no reason for smart meters. You can connect the utility with a wired meter.

There's no reason for wireless classrooms in schools. When you wire your computer connections, you have no exposure. You have full access to the Internet, but you're not going to be exposing kids.

Q Okay. I appreciate that explanation. And let me just follow up on it a little bit. What I think I hear you saying is that your position is one largely of social environmental policy. You're basically saying, I don't know what the health risks are of having smart meters, but because they don't serve any particular or any particularly compelling purpose, it would be better to do away with them so as not to incrementally increase exposure to a potentially harmful energy; is that fair?

A That's correct. That's exactly correct.

Q And I understand, I think, from reading some of your prior testimony that you, yourself, are not electromagnetically hypersensitive; you use a cell phone and have Wi-Fi in your house, right?

A That's correct. My cell phone is right over here.

Q And --

A But I use my cell phone on speaker always. I never

A Well, I think probably without any question, the most serious source is holding your cell phone to your ear, and, again, so totally unnecessary because using a cell phone on speaker or with a wired earpiece, just having it off your body reduces that possibility. The evidence for brain cancers from holding a cell phone in your ear is, in my judgment, overwhelming strong. The evidence related to breast cancer from women that put their cell phone in their bra while they're walking around is also fairly strong. The evidence that holding a wireless laptop on your lap for a man probably means he doesn't need to wear a condom for the next week if he sits there for a long time with that wireless laptop on his lap.

But the -- so the -- the sources of exposure are Wi-Fi, they're cell towers and cell phones. There's -- we have 5G coming up, we don't really understand yet. It may be that those higher frequencies are actually less dangerous than the 3G and 4G that we have today. There is almost no research there.

We have GPS. We have radio and television. It's just -- we have all these different sources, and there's every -- every reason to believe like any other hazardous substance or source what's really

hold it to my ear.

Q Right.

A I don't sleep with it under my pillow. And, you know, I think there's so many simple things that people can do that don't adversely impact their quality of life that reduce their exposure.

Q Gotcha. Do you know how the exposure from smart meters compares to the 0.1 microwatts per centimeter squared goal that is articulated in the BioInitiative Report?

A I don't know the answer to that question, I should, but I don't. I suspect it's higher. It certainly is much lower than the FCC standard of 10 microwatts per cubic meter, but I don't know the answer to what that exposure level actually is.

Q And I know you're not an engineer and you don't -- well, I shouldn't say this, you don't profess to be -- let me take away the preclude to that question. Are you aware of or have you catalogued in your own mind the various manmade sources of radiofrequency radiation or would you leave that to an engineer or a -- someone like that?

A No, I certainly pay attention to that very much so.

Q What would you characterize as the primary sources of manmade radiofrequency radiation?

important is the aggregate total exposure. Therefore, if we can take any steps to reduce that aggregate total exposure, we protect our health and the health of our families and others.

Q Do you know how the exposure from smart meters compares to the exposure from radio or tv?

A I don't know. I am pretty certain it's greater.

Q Do you have -- maybe I have asked you this, but do you have any information about Mr. Friedman's exposure level in terms of different things, either activities he engages in or where he lives or anything like that that tells you anything about how likely he is to be exposed to manmade radiofrequency radiation?

A I don't really have any information on that. There might actually have been something in this older file, but I haven't reviewed that recently at least.

Q Do you have anything about whether welding is an activity that creates a substantial amount of radiofrequency radiation?

A I don't know about radiofrequency radiation. It certainly creates high magnetic fields because of -- of the temperature. I don't know about radiofrequency.

Q Is exposure to magnetic fields that do not require radiofrequency radiation a risk factor for cancer?

1 A Well, there's very strong evidence of childhood
2 cancers elevated by exposure to 60 hertz magnetic
3 fields. The cancers are probably the same, but
4 clearly the energy level in 60 hertz magnetic fields
5 is much less than, you know, megahertz of frequency --
6 radiofrequency fields and yet we have very strong
7 evidence for cancer generation not just in children,
8 but also in adults. And I have published a review on
9 that subject.

10 Q So is there something in the BioInitiative Report that
11 suggested an exposure limit of 0.3 nano watts per
12 centimeter squared to 0.6 nano watts per centimeter
13 squared for total exposure in the frequency range of 3
14 hertz to 300 gigahertz?

15 A I don't recall that specific recommendation. If
16 you're reading it, it's probably there.

17 Q Does that make sense to you?

18 A I don't really want to answer that without giving it
19 more thought.

20 Q Is there an always present natural radiofrequency
21 signal from the earth?

22 A Yes, there certainly is. The magnetic field of the
23 earth is a DC magnetic field, but as each of us walk
24 around our environment, we preserve that so that it
25 has an AC component to it. There are radiofrequency

1 signals coming from the sun that we're all exposed to
2 if we're out in the open.

3 Q I'm sorry, would you repeat that last sentence about
4 the radiation from the sun?

5 A All right. The radiation from the sun includes many
6 different wavelengths. There's the very high
7 frequency radiation, the ionizing part of the
8 spectrum, but also from the sun there are
9 radiofrequency waves that come, as well, some of them
10 penetrate through the atmosphere. And so we're all
11 exposed to low levels of radiofrequency radiation when
12 we're outside.

13 Life, obviously, evolved with that exposure.

14 That doesn't mean that even that low level is totally
15 harmless, but it, obviously, has not prevented life on
16 earth from developing. And our bodies have quite
17 incredible mechanisms for dealing with these reactive
18 oxygen species that come from both the nonionizing and
19 the ionizing part of the electromagnetic spectrum.

20 Q So have you reviewed either the exposure study created
21 by Exponent or the study created by the Office of the
22 Public Advocate in the Maine Public Utilities
23 Commission proceedings to analyze the exposure of a
24 person on whose home a Central Maine Power Company
25 central meter is affixed?

1 A No, I have not reviewed that.

2 Q Is -- would studies that were performed in connection
3 with that proceeding be helpful to you in
4 understanding whether the exposure from a smart meter
5 might be harmful to someone like Mr. Friedman?

6 A Well, I would not give any credibility to anything
7 produced by Exponent because they're so clearly biased
8 in their approach. A careful study would be valuable,
9 but it should be a study that is done and published in
10 a peer-reviewed scientific journal to have any
11 credibility, even then that doesn't always assure that
12 the study is done well and objectively, but at least
13 it's one guard against conflicts of interest in
14 recording your results.

15 Q And tell me the basis for your statement that Exponent
16 is so biased as to be noncredible?

17 A Their documents are never published in peer-reviewed
18 journals. They are published as Exponent reports.
19 They are always on the decide -- on the side of
20 defendants. I've gone up against Exponent people in
21 almost every case that I've been involved in with
22 electromagnetic fields, and I consider them to be
23 hired guns, just a bunch of people that make their
24 living by trying to minimize the adverse health
25 effects of exposure to radiofrequency fields.

1 Q Do you understand that field studies showing the
2 exposure to a person using a Central Maine Power
3 Company smart meter were presented to the Maine Public
4 Utilities Commission in the proceeding in which you
5 testified?

6 A I don't know the answer to that.

7 Q You don't recall seeing those studies back at the
8 time?

9 A I don't. I actually didn't even remember the
10 proceeding, so I apologize.

11 Q Sure. No need to apologize about something that
12 happened eight years ago. I get it.

13 Do you know what -- do you consider the Office of
14 the Public Advocate a hired gun, as well?

15 A Basically, yes. I mean, I -- an advocacy
16 organization, no matter which side it's on, has a
17 built-in conflict of interest. And, you know, I have
18 been -- I've actually written quite considerably about
19 conflicts of interest. We're all vulnerable to it.
20 And, you know, I would apply that to myself, as well.
21 But there are degrees of conflicts of interests, and,
22 you know, there's -- there are some institutions, some
23 groups that really can't avoid the fact that they're
24 an advocate group. You can be an advocate for the
25 plaintiffs, you can be an advocate for the defendants,

1 but somewhere in between there has to be people that
2 are objective in reviewing the scientific data and
3 drawing their judgments in an objective fashion. I
4 try to do that. Do I always succeed? I don't know.
5 But I try very hard to base my decisions on the weight
6 of the scientific evidence and separate that from
7 personal advocacy for one thing or another.

8 On the other hand, of course, I'm a public health
9 physician. Public health is the profession where you
10 try to prevent disease, and so in that regard, a
11 public health physician's job is to identify hazards
12 and try to persuade people to reduce their hazards,
13 whether it's smoking or exposure to radiofrequency
14 MFs.

15 Q Going back to the Maine Office of the Public Advocate,
16 what -- where do you see the bias or what opinion do
17 you have regarding the bias of the Office of the
18 Public Advocate?

19 A Let's just say I don't know very much about the Office
20 the Public Advocate, but just the title -- advocates
21 have a position that is not necessarily based on the
22 total science. I don't know anything -- any more
23 about that particular organization.

24 Q And I think you've answered this, but you would
25 acknowledge, I take it, that you have a certain bias

1 journal. And one of the criticisms that has been
2 levied against it is that it was not peer-reviewed.
3 We made a specific decision not to have it peer-
4 reviewed and published as such in a scientific
5 journal. Now, various parts of it, like my public
6 health chapter, was later submitted to a peer-reviewed
7 journal and has been published in that regard. But
8 the BioInitiative Report was an advocacy report.

9 Q Which -- do you recall which governments made the
10 judgment that I referred to before about the -- what
11 they regarded at least as the imbalance and
12 unreliability of the BioInitiative Report?

13 A I have a whole folder of those reports. I don't
14 recall all of them. Certainly the Netherlands,
15 Denmark, Australia, I think there were quite a number
16 of others that published documents trying to refute
17 the information in the BioInitiative Report.

18 Q And maybe -- maybe you can't answer this, but I'm --
19 just my own personal observation is it sounds -- it
20 seems to me like the Netherlands and Denmark are
21 countries that you would think would be pretty tuned
22 into public health concerns. Were you surprised by
23 their reactions to the report?

24 A Frankly, yes. I question whether they actually read
25 it, but I was surprised.

1 not just in favor of reduction or minimization of
2 disease, but in advancing a view that you hold about
3 desirable social policies, correct?

4 A That's correct. And policies based on scientific
5 evidence, but always with the understanding that you
6 must balance risk versus benefit.

7 Q Are you aware of criticisms of the BioInitiative
8 Report as exhibiting undue bias?

9 A Very much aware of that, yes.

10 Q And as I recall, I don't have the references in front
11 of me, but some governments of some nations in Europe,
12 I think, have explicitly condemned the BioInitiative
13 Report as being unbalanced and -- well, let's say
14 unbalanced. Are you aware of that?

15 A Yes, certainly. And, you know, I think in some ways
16 the BioInitiative Report was an advocacy report. It
17 was the sense that the science demonstrating harm was
18 being ignored by governments by regulatory
19 institutions. It was clearly published as an advocacy
20 report. Now, that certainly means it's appropriate to
21 be critical of the evidence presented there, but it
22 was -- it was a report that was based on hard
23 scientific evidence and peer-reviewed journals. And
24 it was basically looking at the weight of the
25 evidence. It was not published in a peer-reviewed

1 The other organization that is probably even more
2 important here is the World Health Organization. They
3 have been very much captured by industry people.
4 Repacholi, that we talked about earlier, worked for
5 the World Health Organization before he retired and
6 went to a cell phone company in Italy. When he was
7 there, he promoted as an official NGO of the World
8 Health Organization, the International Council for
9 Radiation, ICNIRP the whole thing stands for, which to
10 this day, advises the World Health Organization that
11 there are no adverse effects of RF radiation below the
12 10 microwatts per centimeter squared or some value
13 near there.

14 I and colleagues from Europe went to the WHO to
15 try to persuade them to review the real scientific
16 evidence. We basically got nowhere. And this was --
17 as an aside, the Institute for Health and the
18 Environment work at the University of Albany is a
19 collaborating center of the World Health Organization.
20 And these are the same people that have the radiation
21 bureau under them. So I felt I had at least some
22 credibility because I do so many things with the WHO,
23 but they refused to change their position. Again, I
24 see this as built-in conflicts of interests.

25 Q Why would the World Health Organization have a

1 conflict of interest?

2 A Because senior individuals employed by the World
3 Health Organization had that conflict of interest.
4 They developed a body that was basically self-
5 appointed that includes only people that agree with
6 that position. And to this day, they refuse to really
7 review the scientific evidence and make appropriate
8 responses to that.

9 One of my papers that you do have, the first
10 author being Belpomme was written in response to our
11 visits with the people of the WHO, presenting the
12 evidence, the scientific evidence for harm that they
13 and other governments, including the U.S. Government,
14 have refused to acknowledge.

15 Q What does it mean to be a collaborating center for the
16 World Health Organization?

17 A Well, the World Health Organization has a number of
18 collaborating centers in different subjects. My
19 corroborating center is environmental health. You
20 don't get any money from the WHO. It's a pain to get
21 the designation, and then the WHO gives you
22 assignments that they want you to do for them. The
23 benefit is it's sort of a Good Housekeeping seal of
24 approval, that -- so, for example, in the U.S., mine
25 is the only collaborating center in environmental

1 the basis of the science, and I don't think the World
2 Health Organization is making its judgments on the
3 basis of science. Now, is there always room for bias?
4 I would never deny that, whether on my part or on the
5 part of others. I don't think I am bias in this
6 regard.

7 It's true that, you know, if you take a position,
8 sometimes it's very difficult to change your position
9 on the basis of new evidence. The fact of the matter
10 is, I got involved in this whole issue of
11 electromagnetic fields being very skeptical of there
12 being any adverse health effect. The work that I was
13 involved in supervising demonstrated there were
14 significant hazards, and in my judgment, the
15 scientific evidence, since that time, has only gotten
16 stronger, and the evidence for a variety of different
17 adverse health outcomes has expanded.

18 Q Yeah, I actually think I saw in some testimony that
19 you gave, I believe it was in the Connecticut power
20 line case, that you indicated in, I think, 2011 or
21 2012 that you had only just recently become convinced
22 that such a thing as electrohypersensitivity existed;
23 is that true?

24 A That's correct. That's absolutely correct.

25 Q But would you agree with me that your position with

1 health. There are others in occupational health, in
2 children's health, that sort of thing.

3 The assignments that I've had, we just published
4 a large review on electronic waste, E-waste in Africa,
5 several issues on E-waste. I work with endocrine
6 disrupting chemicals. I have to prepare a report for
7 the WHO on that.

8 So the -- there are -- there are benefits, but
9 they're not benefits in terms of finance. They're
10 benefits in terms of credibility. And, you know, that
11 seems incompatible with how I see their position on
12 electromagnetic fields, but they're human, like
13 everybody else, and they have this historical position
14 dating from the time when Repacholi headed the
15 radiofrequency office at WHO. That has not been
16 changed.

17 Q So just to try to -- are you suggesting that the issue
18 with the World Health Organization is sort of a
19 confirmation bias, that they staked out a position and
20 they're just worried about deviating from it now?

21 A That's exactly how I see it.

22 Q Do you allow for the possibility that you may have the
23 same bias?

24 A I certainly allow for the position that all of us can
25 be biased. I think -- I think I make my judgments on

1 regard to the appropriate standard for -- the safe
2 exposure level to radiofrequency radiation is
3 distinctly a minority position in the scientific
4 community?

5 A Yes, I agree with that.

6 Q And so the fact that the World Health Organization
7 disagrees with you could be a result of their bias or
8 it could just be a product of the fact that they agree
9 with most of the scientific community in the world; is
10 that also true?

11 A Well, the greater scientific community of the world
12 doesn't read the papers that present the evidence and
13 I think that's also true for WHO. They have a biased
14 that's so strong that they can only take their advice
15 from this independent organization, which is an
16 official NGO and that -- that's an organization that
17 was built on bias and it remains.

18 Q And I'm sorry, maybe I'm misunderstanding you, is that
19 an NGO that's different from the WHO?

20 A Yes.

21 Q What is that NGO?

22 A It's the International ICNRP, International Council on
23 Nonionizing Radiation Protection. It's a group that
24 when one person retires, they appoint another. It's a
25 self-appointed body. It was primarily engineers and

1 physicists originally. It's been subjected to huge
2 criticism from people around the world. They have
3 added some more medically-oriented people, but they
4 appear to choose their people only to have members who
5 minimize any adverse health effects of electromagnetic
6 fields. And the WHO because they have this official
7 status, their comment to us when we visited them is
8 that that's where they take their advice, from this
9 ICNRP committee.

10 Q And what did your University or your section of the
11 University need to do to become a collaborating
12 center, was there some sort of an application process
13 that you go through, a vetting process?

14 A Yes, a major vetting process, and the reason that --
15 that we were invited to present an application to them
16 is that I had been working with the WHO on a whole
17 variety of issues for a long period of time. I, for a
18 period, chaired an advisory committee. The WHO
19 International works a lot with the National Institute
20 of Environmental Health Sciences, part of our NIH
21 system, and I chaired the advisory committee between
22 those two organizations, did a lot of work for the WHO
23 and that led to their inviting me to submit an
24 application.

25 Q And when did that happen roughly?

1 A Oh, probably about 2000, maybe 2005. I think we've --
2 we've been reviewed and approved three times, and you
3 have to be reevaluated every three years. So we have
4 had that designation at least 10 years, maybe 11, 12
5 years.

6 Q But -- and just to be clear, the -- I understand that
7 you believe that ICMIRP is biased in part because --
8 in part because of confirmation bias and in part
9 because it's a self-selected body, but would you agree
10 that the group of folks who put together the
11 BioInitiative Report are similarly self-selected and
12 have similarly staked out a position for the last 15
13 years or so that would be difficult to deviate from
14 even if the evidence contradicted it?

15 A Yes, I think I would agree with that. We selected
16 those authors of the various chapters on the basis of
17 the subject matter of their publications. So if there
18 was a bias, it was Cindy Sage and me in choosing
19 people to write chapters, but we chose them based on
20 the work that they had done, the sanctity of work they
21 had done.

22 Q Right.

23 (Whereupon there was a break in the deposition at
24 1:01 p.m. and the deposition reconvened at 1:37 p.m.)

25 BY MR. TAINTOR:

1 Q All right. So I just want to ask you a little bit
2 about your familiarity with any of the other expert
3 witnesses in the case who have been designated by the
4 plaintiff. We talked about Dr. Heroux or a Heroux,
5 however we pronounce his name. There's also a fellow
6 named Kent Chamberlin; do you know him?

7 A No, I do not.

8 Q Okay. And a fellow named Eric Anderson, I take it you
9 don't know him either?

10 A No, I do not.

11 Q All right. So I think before you mentioned the
12 Belpomme article, which has been marked as Deposition
13 Exhibit 8. And I see -- oh, I see you co-authored
14 this with Dr. Hardell, who was a witness in the
15 meeting of the Public Utilities Commission matter and
16 is also a co-author. Can you tell me about the
17 significance of this case -- this article from your
18 point of view?

19 A Well, those are the people that went with me to the
20 World Health Organization in Geneva trying to persuade
21 the World Health Organization to change their status.
22 They did not do so and so we wrote this paper as a --
23 again, as sort of a mini BioInitiative Report, but a
24 summary of the evidence for cancer for
25 electrohypersensitivity for neurological and

1 reproductive changes in electromagnetic fields with
2 some discussion of the mechanisms whereby these things
3 occurred.

4 Q Okay. So all of the folks who were co-authors here
5 were part of this World Health Organization mission
6 with you?

7 A That's correct.

8 Q And I have to confess, I haven't looked at this in
9 super close detail, but just looking at some headings,
10 heading number 2 talks about mobile phone use and the
11 risk for glioma, meningioma, and acoustic neuroma.
12 And none of those conditions are at issue in this
13 case, correct?

14 A That's correct.

15 Q And then if we look at -- if we skip over number 3 for
16 the moment. Number 4 is an emerging concern:
17 Cognitive and neurobehavioral problems in children.
18 And can we agree that that's not a concern in this
19 case, correct?

20 A That's correct.

21 Q And then heading number 5 has to do with
22 electrohypersensitivity, microwave illness or
23 idiopathic environmental intolerance attributed to
24 electromagnetic fields. And I think you've told us
25 that you have no basis for believing that Mr. Friedman

1 is -- suffers from electrohypersensitivity, correct?

2 A That's correct. I mean, he may have some of the

3 symptoms that -- he apparently has ringing in his

4 ears, which is one of the symptoms, but I asked him

5 directly and he does not allege that he is

6 electrohypersensitive.

7 Q So ringing in the ears is one of those conditions that

8 can be caused by a whole host of conditions, correct?

9 A Absolutely, yes.

10 Q And that's what you referred to as a nonspecific

11 complaint?

12 A Yes.

13 Q Sorry, I was looking at the some of the documents

14 Bruce emailed over during the break.

15 If we go back to heading number 3, other diseases

16 and pathological conditions attributed to exposure to

17 low-intensity EMFs, are there -- does this section

18 pertain to any of the issues in this case?

19 A No, I don't think it does.

20 Q So is there anything in this article that gives us any

21 information about health risks to Ed Friedman?

22 A Well, the article summarizes the evidence on adverse

23 health effects, but it focuses primarily on brain

24 cancer, which Ed does not have, on

25 electrohypersensitivity, which he does not have, and

1 the full syndrome of these and the cognitive effects,

2 which also he does not have. But it does focus a lot

3 on the mechanisms whereby electromagnetic fields cause

4 diseases and especially on regeneration of reactive

5 oxygen species, and that is important -- I think it's

6 the basic mechanism for all of the effects of

7 electromagnetic fields except those caused directly by

8 DNA damaged by ionizing radiation.

9 Q So I guess my question is, is there -- this article in

10 terms of talking about the mechanism by which

11 radiofrequency or nonionizing radiation of any kind

12 can cause biological harm in humans focuses on the

13 risk of harm to the population at large and not to

14 people specifically like Ed Friedman with his

15 particular illness; is that true?

16 A That is true, yes.

17 Q Deposition Exhibit Number 9 is your article from the

18 Review of Environmental Health, 2015, the microwave

19 syndrome or electrohypersensitivity historical

20 background. And, again, I -- because I -- I am not

21 sure that there is any -- I think we have agreed that

22 there is no evidence that Mr. Friedman has

23 electrohypersensitivity and we haven't focused on

24 this, but does this article have any relevance to

25 Mr. Friedman's case?

1 A Well, it does indirectly at least because it does

2 report on smart meters as exposures leading to

3 electrohypersensitivity. Now, he doesn't have

4 electrohypersensitivity, but he had at one point a

5 smart meter.

6 Q Right.

7 A So it adds to the general body of evidence that there

8 are adverse health effects at intensities of

9 radiofrequency radiation that don't cause tissue

10 heating. The -- that's an important point and that's

11 really an issue in the whole paper because the -- the

12 World Health Organization, the FCC, ICNRP, they all

13 acknowledge that microwave ovens are harmful because

14 they cause heating, and they make the assumption that

15 there's no adverse health effect at intensities that

16 do not cause heating, which is just nonsense and

17 totally incompatible with a lot of evidence at various

18 end points.

19 Q You said that you thought Mr. Friedman had a smart

20 meter at some point; is that your understanding?

21 A Well, I think that earlier -- that earlier case was

22 about smart meters, and I don't know whether he had

23 one in his home or not, but he was involved in the

24 opposition to smart meters.

25 Q Right. But you have no information, do you, that he's

1 ever had a smart meter?

2 A No, I do not have any information.

3 Q Looking at Exhibit 9, on page 221, the second full

4 paragraph says, The typical exposure from a smart

5 meter is less than that of use of a cell phone held to

6 the head and like that from our sources of RF does

7 decline rapidly with distance from the smart meter.

8 It goes on and we can talk about the other things

9 it says. What is your understanding of the -- I don't

10 know if this is the right way to put it, the speed

11 with which or the suddenness with which exposure

12 declines with distance from the smart meter?

13 A Well, it -- again, I don't have personal information

14 there. I know that it does decline with distance.

15 Almost all sources of RF will decline with distance.

16 I have seen reports that even at something like 8 feet

17 away from the smart meter there's still significant

18 signal.

19 Smart meters are often placed on the outside of

20 houses that are brick and the radiation doesn't

21 penetrate the house very far. On the other hand, if

22 it's wood or some other substance that can penetrate

23 the house -- but I have, you know, obviously, this is

24 beyond my -- my area of expertise.

25 Q Okay. And this may also be beyond your area of

1 expertise, and that's fine, please tell me, do you
 2 know whether the energy emitted from a smart meter is
 3 emitted in a direction or whether it is emitted in
 4 multiple directions?
 5 A I believe it's emitted in multiple directions, but
 6 clearly the reception is in one direction. But as
 7 we've said before, the signals are these very brief
 8 and very intense pulses of, oh, something between 10
 9 and 20 pulses and then a couple of seconds rest and
 10 then another burst of these multiple pulses.
 11 Q And how long do those pulses typically last, if you
 12 know?
 13 A Very brief. I don't know the answer to that question,
 14 but they're very brief because you're getting
 15 something like 10 to 20 pulses within a period of 1
 16 second or less.
 17 Q What is dirty electricity that you refer to in your
 18 article?
 19 A Well, it's a term that was developed by other people,
 20 Sam Milham, particularly. This is the -- EMFs are
 21 basically a sine wave and the dirty electricity is
 22 peaks that are superimposed on the sine wave. It's
 23 characteristic of eclectic magnetic fields from
 24 electricity and, obviously, information is carried by
 25 peaks superimposed on sine waves in the radiofrequency

1 era.
 2 So the idea is that it's the dirty electricity,
 3 not the sine wave. This is what I was saying about
 4 the signals from smart meters. These pulses are
 5 superimposed on a sine wave, and it appears to be the
 6 rapid rise and fall that is so provocative. Why that
 7 would generate reactive oxygen species more than the
 8 sine wave, I don't know that there's a good
 9 explanation for that, but the evidence -- the weight
 10 of evidence is that it's the rapid rise and fall
 11 that's so important.
 12 Q And I'm just -- I need to get some clarification from
 13 you because you talked about a peak being superimposed
 14 on a sine wave. And I'm -- believe me, even less an
 15 engineer than I am a doctor, but doesn't every sine
 16 wave have a peak?
 17 A Well, there's the peaks of the natural sine wave, yes,
 18 that's not what I'm talking about.
 19 Q Right.
 20 A This is -- you have a sine wave and on that you
 21 superimpose information, which is rapid rises and
 22 falls.
 23 Q I see.
 24 A In the case of -- the way dirty electricity was --
 25 that term was developed early was in relation to the

1 magnetic fields of power lines, and there's no intent
 2 to convey additional information on those sine waves,
 3 but in reality depending on how they're constructed
 4 above the grounding circuits and that sort of thing, a
 5 number of people have seen these rapid rises and falls
 6 and have related that to the risk of leukemia in
 7 children and other diseases associated with power line
 8 magnetic fields.
 9 Q And is that issue related to or distinct from what you
 10 have described as the generation of reactive oxygen
 11 species?
 12 A It is related to and probably is the basis of the
 13 generation of these reactive oxygen species and that's
 14 why we -- we believe that the smart meter waveforms
 15 being these very rapid rises and falls, why they are
 16 so much more toxic to people than just the sine wave,
 17 and the reality is that there's some evidence that the
 18 sine waves themselves are not very dangerous, that
 19 it's only the superimposed rapid rises and falls that
 20 generate the reactive oxygen species that are then the
 21 cause of the health symptoms.
 22 Q And you said we believe that the superimposition of
 23 these very high peaks on the sine waves makes RF
 24 emissions generated by smart meters more toxic, has
 25 that before been proven?

1 A No, I don't think that's been proven, and I am not
 2 sure how you would really prove it. The reality is if
 3 you take a measurement of the intensity from a smart
 4 meter over a period of time, the average is not
 5 unusually high. The reality is that of the reports
 6 that people that develop the electrohypersensitivity,
 7 it seems to be so much just the proximity to smart
 8 meters, other things, as well, of course. But if you
 9 looked at the average intensity from a smart meter,
 10 there's no indication why that should be so great
 11 except when you begin to look at these rapid rises and
 12 falls it begins to make some sense.
 13 We looked earlier at that Carney paper of this
 14 electrosensitive woman physician, and again she
 15 responded most to these rapid rises and falls. In
 16 that case, that was what dirty electricity was
 17 originally described to be because it was -- it was
 18 superimposed pulses on a relatively low frequency sine
 19 wave, that being 60 hertz.
 20 Q So can you do your best to explain in laymen's terms
 21 what it means to say that reactive oxygen species are
 22 generated?
 23 A Well, reactive oxygen species are -- they're -- it's
 24 probably best understood if you break down a water
 25 molecule. You have -- you have oxygen -- you break

the molecule and the balance between the electrons and protons is screwed up, so you end up with a reactive entity that tries to grab onto, tries to steal electrons or protons from whatever is nearby.

The body is primarily composed of water. You can have reactive oxygen species from almost any molecule, but with ionizing radiation, with nonionizing radiation, the thing that's most likely to be hit when the radiation hits the body is a water molecule. And that breaks down, creates these reactive oxygen species that then try to steal protons or electrons from whatever is nearby.

Now, reactive oxygen species are formed normally in metabolism by our body. They're formed in mitochondria and they're part of the process of generating the ATP, this energy for the body. So our body has very well-developed, protective mechanisms, different enzymes, superoxide dismutase is one, catalase is another. Enzymes -- glutathione is another. Some of the vitamins are reactive oxygen species scavengers. So it isn't that these are strange to our body, but in sensitive people they are formed in a greater amount than in those of us that are not electrosensitive. And if they overpower the protected mechanisms the body has, that's when we

harmful or disease-producing in people who are electrosensitive, true?

A Well, it's the basis of the electrosensitivity, but I don't think that's true in general because I think the brain tumors that you get if you hold your cell phone to your head for too many hours, that's also development of reactive oxygen species, but most people that develop a brain tumor from using their cell phone too much are not in addition electrosensitive.

Q Gotcha. Okay.

A So it's a common mechanism with several different outputs.

Q Okay. And has there ever been an article published or -- let me start with that, has there ever been an article published which, to your knowledge, describes the phenomenon of a person suffering harm from the generation of reactive oxygen species as a result of exposure to a smart meter?

A Specifically to smart meters, I can't think of one at the moment. There is an article in that Dropbox by Yakymenko or whatever his name is that provides the evidence for reactive oxygen species being generated by RF. I think most of us believe that reactive oxygen species are the common mechanisms, but whether

begin to see disease.

Now, is all of that super well documented in the scientific literature, no, I am extrapolating how I understand the net result, but I think most people that work in this area would agree with that generalization.

Q And, again, correct me if I'm wrong, but what I think I hear you saying is that that phenomenon you've just described is specific to people who are electrohypersensitive; is that true?

A No, I don't think it's specific to those people. I think for some reason it may be that they have a deficient supply of these other mechanisms for defending against it. It may be that for some reason they -- some difference in their body results in a greater generation, but all of us generate reactive oxygen species, when we metabolize food, there's no reason to think that we don't generate them when we're exposed to holding a cell phone to our head, but there is a difference in an individual's sensitivity, which we believe is in their ability to scavenge or to inactivate these reactive oxygen species.

Q And I appreciate that clarification because my question was a poor one. What I meant to say was, the process or the phenomenon you've described is only

there's a study that's looked specifically at smart meter exposure, I can't think of one at the moment.

Q And the Yakymenko article, is that Exhibit 16?

A Yes, it is.

Q Okay. And so is this article -- tell me again the significance of this article from your point of view for this particular case?

A Well, this is -- I'm not sure it's actually specifically relevant to this particular case. It's -- it presents the evidence that reactive oxygen species are generated by radiofrequency radiation. We have some of that in the Belpomme paper, as well. But we see the reactive oxygen species as the common mechanism for a great variety of health effects.

This whole thing about sperm counts, very clear demonstrations that holding a wireless laptop in your lap increases the generation of reactive oxygen species in testicles. So we think that's the basis of the brain cancer, the fertility problems, the learning and remembering problems, the electrohypersensitivity. It seems to be a critical component of all of those adverse health effects of all RF radiation.

Q Does the Yakymenko article support the proposition that reactive oxygen species are generated at the levels of exposure to RF that come from smart meters?

1 A Well, it's not dealing specifically with smart meters.
 2 Q I get that, yeah. What I'm talking about is just
 3 whether the -- whether this phenomenon is generated at
 4 levels of exposure which are similar or analogous to
 5 the levels of exposure that you would see from a smart
 6 meter or whether these phenomena are observed only at
 7 much higher levels of exposure?
 8 A Well, these studies are on isolated cells, so I'm not
 9 sure it's -- it's quite fair to say that this article
 10 provides support for ROS generation in a human being,
 11 but it certainly is one of the best articles that
 12 demonstrate that low-intensity radiofrequency
 13 radiation at intensities much lower than that that
 14 causes tissue heating generates reactive oxygen
 15 species.
 16 Q So the Yakymenko article tells us that in an
 17 experimental environment exposure to low-intensity
 18 radiofrequency radiation can cause ROS in isolated
 19 cells, and you infer from that that because that's the
 20 case exposure to low levels or low-intensity
 21 radiofrequency radiation could cause harm in human
 22 beings?
 23 A That's right. And the other important part of that,
 24 getting back to that Belpomme article that I am a
 25 co-author on, what Belpomme has done is take blood and

1 urine samples from people that have
 2 electrohypersensitivity and look for markers of
 3 oxidative stress. Oxidative stress is what this
 4 generation of reactive oxygen species leads to, and
 5 what he finds is you can detect in blood and urine
 6 tests that indicate that people with
 7 electrohypersensitivity have more oxidative stress
 8 than people that do not have electrohypersensitivity.
 9 So I think the combination of the cellular study,
 10 which is Yakymenko, and the human studies, which is
 11 Belpomme -- and he has a number of other papers that
 12 have more of the original data for that support,
 13 together that -- they, and other publications, lead
 14 one to conclude that the major adverse initial effect
 15 of radiofrequency radiation is a generation of
 16 reactive oxygen species.
 17 Q However, again, just to be clear -- maybe I should get
 18 away from -- let me ask it this way, the significance
 19 of the Yakymenko article, I take it, is that this, in
 20 your mind, provides support for the proposition that
 21 it is biologically plausible that RF emissions from a
 22 smart meter could cause harm to a human being; is that
 23 true?
 24 A That is correct at very low intensities, and that's
 25 important.

1 Q All right. When we talk about exposure to RF, we're
 2 talking about a combination of both intensity and
 3 duration; is that true?
 4 A Yes.
 5 Q And if I understand your testimony correctly, correct
 6 me if I'm wrong again, if smart meters were just
 7 operating at whatever their normal frequency is, sort
 8 of in the background, without rapid on/off pulses, you
 9 wouldn't be very concerned about them; is that true?
 10 A Would you state -- do that again?
 11 Q Sure. If smart meters were just operating at their
 12 normal frequency without rapid and frequent off/on
 13 pulses, you would not be particularly concerned about
 14 their health effects; am I right about that?
 15 A Yeah, that is correct. And that's actually a very
 16 important question because the utilities only use
 17 information for very brief periods of time, sometimes
 18 I guess twice a day, but the smart meters generate
 19 these bursts continuously. And, again, this is one of
 20 these examples of if -- if people would accept the
 21 fact that there's harm from these continuous bursts of
 22 pulses, why can't the utilities only have, you know,
 23 three bursts in the morning and three bursts at night?
 24 There -- the meters generate this constantly.
 25 Now, there is a brief pulse, a little space,

1 another brief pulse, goes on 24/7. So, you know, as
 2 we said earlier, I'm not saying there's any threshold
 3 for which there's no biological effect, but relative
 4 to the smart meter buzzing all day, I wouldn't have
 5 any concern about a few pulses with the information
 6 being used, but that's not how the smart meters
 7 operate.
 8 Q And do you have information about the time of day at
 9 which the -- what the duty cycle is, if you will, of
 10 the CMP smart meter?
 11 A No, I have no information on that.
 12 Q Hypothetically, if Mr. Friedman has a smart meter
 13 attached to -- outside his kitchen and he's asleep 30
 14 feet away in the house, when these bursts of energy
 15 occur, is he at any risk of exposure from those bursts
 16 of energy?
 17 A If he's 30 feet away, I would suspect he is at very
 18 minimal, if any, risk.
 19 Q In that regard, have you -- do you have any opinion
 20 about the -- from a percentage point of view, about
 21 the extent to which harm to Mr. Friedman is heightened
 22 or exacerbated by or would be heightened or
 23 exacerbated by him having a smart meter on his home?
 24 A Ask that question again.
 25 Q Yeah, it was a really bad question.

1 I think it's your belief that everyone in the
2 world is at some heightened risk of harm if they have
3 a smart meter, true?
4 A True.
5 Q Do you have any opinion regarding the extent to which
6 Mr. Friedman, because of his Waldenstrom's, is at a
7 greater risk of harm than a healthy person would be?
8 A Well, yes, I do have a strong opinion on that. Now, I
9 obviously don't know where his smart meter is, whether
10 it's by the kitchen or by the bedroom, but whatever --
11 in his particular case, he has a form of Non-Hodgkin's
12 lymphoma. We know that for leukemia, which is a
13 related disease, that the duration of the remission of
14 that -- of that cancer is reduced in relation to
15 excessive exposure. He is vulnerable to have a
16 briefer period of remission. This is a uniformly
17 fatal cancer, if you live long enough.
18 It's like prostate cancer. Every man's going to
19 get prostate cancer if they live to be 120. But for
20 this particular cancer that he has, elevated exposure
21 to electromagnetic fields from whatever source,
22 including smart meters, is going to decrease the
23 duration of that remission.
24 And while he can -- again, the issue here is
25 while he is allowed to opt out, is he going to have to

100

1 pay an extra charge for that? And that's just, to my
2 mind, absolutely ridiculous. He has a disability.
3 It's a serious disability. We know that excessive
4 exposure's going to increase (sic) the period of his
5 remission, and there is absolutely no justification
6 for making him pay extra for that.
7 Q Okay. I want to break that apart in a minute, but,
8 Melissa, could you just read back the last sentence of
9 Dr. Carpenter's testimony so I can quote him
10 accurately or make sure I understand what he said?
11 (Whereupon a portion of the answer was read back
12 by the court reporter.)
13 A That should have been decrease, decrease the period of
14 his remission.
15 BY MR. TAINTOR:
16 Q Right. And I thought that's what you said. It
17 doesn't matter. I knew what you were trying to say.
18 But I just want to make sure, you don't actually
19 know that exposure is going to decrease his period of
20 remission, do we? I mean, we know -- I shouldn't say
21 we know, you believe that there is a risk that that
22 will happen, but you don't know that will happen,
23 true?
24 A Of course, that's true. One never -- never knows that
25 something is going to happen, but on the basis of the

1 scientific evidence, there is reason to believe that
2 that will happen and that his period of remission will
3 be reduced.
4 Q Right. And so my poorly-phrased question earlier was
5 meant to get at the degree of confidence you have in
6 that opinion and the likelihood that you're prepared
7 to ascribe to that possibility. So are you prepared
8 to say to a reasonable degree of medical certainty
9 that the likelihood of Mr. Friedman's remission,
10 period of remission being decreased -- let me strike
11 that and start over.
12 Are you prepared to say to a reasonable degree of
13 medical certainty that Mr. Friedman's period of
14 remission is likely to be decreased by 1 percent?
15 A I would certainly say with great confidence that it's
16 more likely than not that his period of remission is
17 going to be decreased. I would not be willing to give
18 it a percent because I don't have the information on
19 the magnitude of his exposure to the smart meter
20 radiation. It may be, as we said earlier, if he's 30
21 feet away that there would be effectively no -- no
22 exposure.
23 So I can't give a percentage, but I certainly can
24 say with great confidence that his period of remission
25 is going to be decreased. Is it 5 seconds, is it 5

102

1 years, I just don't have the information to make that
2 judgment.
3 Q But it might be 5 seconds?
4 A That's correct.
5 Q And you're not prepared to say to a reasonable degree
6 of medical certainty that it would be more than 5
7 seconds?
8 A No, I am not.
9 Q Okay. All right. Let me figure out where I am here
10 and see if we can plow through the next hour or so.
11 In your report, which is Exhibit 7 --
12 MR. MERRILL: I'm sorry, what's the number,
13 Chris?
14 MR. TAINTOR: Seven.
15 MR. MERRILL: Thanks.
16 MR. TAINTOR: Yeah.
17 BY MR. TAINTOR:
18 Q At the top of page 3 of your report is the statement,
19 Besides airborne transmission emissions to the
20 utility, there is some evidence these are RF
21 emissions, as well as lower frequency emissions
22 affecting power quality, may be transmitted throughout
23 structures as conducted and radiating emissions on
24 building wiring, acting as an antennae.
25 Can you explain to me in relatively simple terms

1 what you mean by that?

2 A I'm not seeing -- this is in my report on the third

3 page?

4 Q Yes, at the end of the -- the follow-on paragraph on

5 the previous page. It ends with the parenthetical

6 Isotrope, 2013.

7 A This is my report?

8 Q Yes, Expert Report, David Carpenter.

9 A That's one of the other cases?

10 Q No, that is this case.

11 MR. MERRILL: You're saying it's on page 3,

12 Chris?

13 MR. TAINTOR: Well, that is what it is on my copy

14 here. It starts at the top of the page, says, What is

15 important is cumulative, aggregate RF exposure.

16 MR. MERRILL: Okay. And where are you --

17 MR. TAINTOR: The last sentence of that

18 paragraph.

19 BY MR. TAINTOR:

20 Q Do you see where I am, Dr. Carpenter?

21 A No, I don't.

22 MR. MERRILL: Where it says, Besides airborne

23 transmissions?

24 MR. TAINTOR: Right.

25 A This is under smart meters or under this case or under

1 radiofrequency fields and cancer?

2 BY MR. TAINTOR:

3 Q Under smart meters. It's the first paragraph under

4 the heading, Smart Meters. It's the last -- last --

5 A Oh, okay. Yeah. Right. We don't have the same page

6 numbers here.

7 Q Oh, okay.

8 A So it's the sentence, Most electronic meters transmit

9 signals, is that it?

10 Q No, the next -- the next sentence, Besides airborne

11 transmission. I guess I'm trying to understand what

12 the significance is of that sentence where it talks

13 about radiofrequency being transmitted throughout

14 structures as conducted and radiating emissions on

15 building wiring acting as an antennae, what's your

16 understanding of what that --

17 A I'm not finding that in my report. This is under,

18 smart meters, the end of the first paragraph?

19 Q Right. It's Exhibit 7 I sent to you yesterday.

20 A Let me go back to the exhibits because I think you

21 must be in one of the other reports. There are three

22 other case reports there.

23 Q This one is captioned, Friedman v. Central Maine Power

24 Company.

25 A It's the heading?

1 MR. MERRILL: Look at Exhibit 7 of the exhibits I

2 sent you yesterday, David.

3 THE WITNESS: I'm getting there right now. Well,

4 the seventh exhibit is my paper on the microwave

5 syndrome, that's not what you're talking about, is it?

6 BY MR. TAINTOR:

7 Q No. Mm. Okay. That's --

8 A All right. This -- all right. I have got Exhibit 7,

9 which is my report.

10 Q Top of the third page.

11 A What is important is cumulative -- okay. Now we are

12 on the same page.

13 Q Yeah. Okay. So I was asking about that last

14 sentence, and I was trying to understand the

15 significance from your point of view medically of the

16 last sentence, which refers to the transmission of

17 radiofrequency emissions throughout building wiring.

18 A Yes.

19 Q Can you tell me how that is significant, in your

20 opinion?

21 A Well, what I'm trying to explain there, and again I am

22 not an electrical engineer but the -- there -- the

23 engineers do make statements that say that you get

24 radiofrequency emissions from power lines. You get

25 dirty electricity on all of these different kinds of

1 things and that the -- obviously, the electromagnetic

2 fields go through the air, but they can be conducted

3 into the wiring of the house and that can increase the

4 exposure of dirty electricity because of the building

5 wiring, which acts as an antennae. Again, I shouldn't

6 pretend that I really understand that all that well,

7 but that's why I do have a reference for that because

8 this is the kind of statements that are made by the

9 engineers that do understand how household wiring and

10 whether a house is made of metal or brick or wood

11 influences the lower-frequency emissions that you get.

12 Q You mean lower -- do you mean lower-intensity

13 emissions or lower frequencies?

14 A Well, this is -- both RF and lower-frequency emissions

15 that affect the quality of the signal. I'm not

16 explaining that very well because I don't understand

17 it very well.

18 Q Okay. All right. Well, that makes two of us. Great.

19 I will ask somebody else.

20 But I guess the point is, the fact or the

21 assumption, I guess, stated in the sentence we just

22 talked about, that lower-frequency emissions may be

23 transmitted through building wiring does not inform

24 your opinions about Mr. Friedman's exposure because as

25 far as I know and as far as you know, I assume, that

1 exposure -- the exposure he would receive in a room of
 2 his home remote from the smart meter has never been
 3 measured; is that true?
 4 A That's correct. That is correct. But what I was
 5 trying to say there, the smart meters are generating
 6 signals that go through the air from the smart meter
 7 to the utility.
 8 Q Right.
 9 A And those airborne radiofrequency signals can have
 10 influences on the wiring of the house that will act as
 11 an antennae and make things worse than they would be
 12 if they didn't act on the house wiring.
 13 Q Right. It could make things worse, but we don't know
 14 whether it would be sufficiently worse to have any
 15 impact whatsoever on Mr. Friedman, true?
 16 A That's true, yes. But we don't know that it doesn't
 17 either, so it's just an unknown.
 18 Q We're in a state of uncertainty?
 19 A Yes.
 20 Q So we've talked about Exhibits 8 and 9, I think. Let
 21 me ask you about Exhibit 10. So I guess this is the
 22 McCarty article we talked about a little bit before.
 23 A Yes.
 24 Q And would you tell me specifically how -- so I guess
 25 you wrote in your report that there's been only one

1 completely blinded study of an electrosensitive
 2 individual that has documented the ability of that
 3 individual to report symptoms in the presence of an
 4 electromagnetic field; is this that case report?
 5 A This is that case report, yes.
 6 Q And that's just of one person, correct?
 7 A That's of just one person, yes.
 8 Q And is this -- I think I have seen this described in
 9 your testimony in another case, it may have been The
 10 Fay School case, I am not sure which, is this the
 11 situation where they take somebody into a room that is
 12 completely shielded from all other radiofrequency
 13 radiation and conduct a provocation study?
 14 A Yes. Now, I don't know that in this particular paper
 15 that they were able to shield all outside radiation,
 16 but it was certainly a room where that was
 17 dramatically reduced.
 18 Q Okay. And this is a study of just one person?
 19 A Yes.
 20 Q Is this the one that involves the patient who is a
 21 physician?
 22 A Yes. I probably should have referenced, which I did
 23 not, the Rea study, which we discussed earlier, which
 24 is a larger number of people, but there were some
 25 things done better in this study, which is more -- a

1 little more recent than the 1991 Rea study.
 2 Q And Ray, is that R-a-y?
 3 A R-e-a.
 4 Q R-e-a. 1991. Do you know what journal it was
 5 published in?
 6 A I believe it was the Journal of Bioelectricity.
 7 Q Okay.
 8 A That was the study that clearly showed some people
 9 that blame radiofrequency radiation for their
 10 illnesses. It was not -- they were not able to
 11 distinguish whether they were exposed or not exposed,
 12 whereas others could correctly identify when the
 13 fields were on.
 14 Q Would you be willing to -- I see -- I see a couple of
 15 Rea articles from 1991 in the Journal of
 16 Bioelectricity. I see an article called,
 17 Electromagnetic Field Sensitivity, is that the one
 18 you're talking about?
 19 A Yes, that's it.
 20 Q I don't know that I have access to the complete
 21 article here, so is that something that you reviewed
 22 and have provided with the documents today?
 23 A I did not provide it with the documents today, and I
 24 think -- I also have the problem that I didn't have an
 25 electronic copy of it. And it's a journal for which

1 it wasn't easy to get a copy. I was being lazy.
 2 That's why I didn't reference that paper in addition.
 3 Q Okay. And then Exhibit 11 is a Falcioni article,
 4 that's a more recent one from 2018, I think. And
 5 what's the significance of this article to your
 6 opinions?
 7 A Well, this is a study of cancer in rodents on chronic
 8 exposure to radiofrequency fields. This one we
 9 perhaps should have discussed after the twelfth, but
 10 this one was a study where the exposure was designed
 11 to be similar to that from a cell tower, so
 12 considerably less than what we will get to with the
 13 NTP study, which is the next one, which was designed
 14 to expose at the levels you would get from a cell
 15 phone.
 16 The point is this study from the Ramazzini
 17 Institute in Italy demonstrated elevations in schwann
 18 cell schwannomas, which is a tumor of the schwann
 19 cells that wrap around nerves, which is one of the
 20 cancers that's seen in people that use cell phones for
 21 long periods of time and an elevation in the risk of
 22 gliomas of the brain, which is the other cancer that
 23 results from cell phone exposure. And this
 24 complements the results of the NTP study, but it's
 25 done at an order of magnitude of lower intensity of

1 exposure.

2 And these two studies together are particularly
3 important because the International Agency for
4 Research on Cancer, part of the World Health
5 Organization, came out with a report -- I have it
6 right here, but I don't remember exactly the year, but
7 it was maybe six, eight years ago that rated
8 radiofrequency fields as possible human carcinogens.
9 One of the reasons their evidence was not stronger
10 than that was that there hadn't been good studies of
11 demonstrated cancer in animals.

12 And this study demonstrates cancer in animals at
13 intensities way below that that would cause tissue
14 heating.

15 Q You said that Falcioni article talks about gliomas and
16 schwannomas?

17 A That's correct.

18 Q And are either of those relevant to Mr. Friedman's
19 situation?

20 A Not directly, but they are -- they're cancers induced
21 by radiofrequency fields. Now, he is not alleging
22 that his Waldenstrom's lymphoma is due to exposure,
23 but the study is important in demonstrating harmful
24 effects of lower intensity radiofrequency fields that
25 do not cause tissue heating.

112

1 Q So just to kind of summarize that again, I think what
2 you're saying is this article, like several others,
3 supports, in your view, the proposition that exposure
4 to radiofrequency at a level that is not sufficient to
5 cause tissue heating can cause some cancers?

6 A That's correct.

7 Q However, in this case -- however, those are cancers
8 that are different from Mr. Friedman's, and we know
9 that Mr. Friedman is not claiming that exposure to RF
10 caused his cancer; is all that true?

11 A That is true.

12 Q The Foliart article, which is Exhibit 12, is another
13 that you've cited in your report. What's the
14 significance of this study in terms of your opinions?

15 A Well, this one is very basic because this is one of
16 those studies that show that children who already have
17 leukemia, if they're in an environment where they have
18 elevated exposure, the period of remission of that
19 leukemia after the initial treatment is shortened.
20 While leukemia in children is not the same as
21 Waldenstrom's lymphoma in an adult male, the --
22 lymphomas and leukemias are both cancers of the immune
23 system.

24 And so this one is directly relevant to my
25 opinion that because of the smart meter on

1 Mr. Friedman's house, he is in danger of having a
2 recurrence of his cancer at a shorter rate of time
3 than if he were not exposed.

4 Q Are there selection biases reflected in this study?

5 A No, I don't think so. It's a good study. They looked
6 at a group of children with leukemia and a group of
7 children without leukemia and -- no, I'm sorry.
8 That's not true.

9 They looked at children with leukemia, monitored
10 their homes to find whether there were elevated
11 magnetic fields and demonstrated that those children
12 that had higher EMF exposures had a recurrence of
13 their leukemia in a shorter period of time than those
14 children that did not have those elevated exposures.

15 Q So if we look at the last page of this article under
16 the heading, Discussion, the authors refer to three
17 limitations of the study; do you see that?

18 A Yes.

19 Q One of the limitations noted by the authors was that
20 fewer than one-third of potentially eligible children
21 had enrolled in the study with lower participation
22 among nonwhite children. Does that reflect the
23 selection bias in your view?

24 A Well, it's not really a selection bias. It is a
25 source of possible confounding when you aren't able to

114

1 recover all the people in your original set, but by
2 itself, it's not selection bias.

3 Q In the last paragraph of the article above the
4 heading, Acknowledgements, reads the sentence, No
5 consistent or statistically significant trend was
6 noted between increasing exposure to MF, magnetic
7 fields, and event-free survival or risk of death.
8 What's the significance of that sentence to
9 interpreting the weight that you would give this
10 article?

11 A Tell me again where that sentence is.

12 Q It's about eight lines up from the bottom, above the
13 caption, Acknowledgements.

14 A Yes.

15 Q It says, No consistent or statistically significant
16 trend was noted between increasing exposure to MF and
17 event-free survival or risk of death?

18 A Right.

19 Q What does that mean?

20 A What they were saying is they were not able to detect
21 there was a response relationship, so that is a
22 limitation of the study, and it's appropriate for the
23 authors to make that comment.

24 The -- every study is limited both by the number
25 of people, number of subjects or your ability to

1 follow them over longer periods of time. I don't
2 think that detracts from the conclusion of the study,
3 but it certainly is a limitation.

4 Q That paragraph goes on to say, Although we report
5 poorer survival among children with the highest MF
6 exposure category, clinical inferences are limited
7 with results possibly attributable to chance alone.

8 Does the fact that the results are possibly
9 attributable to chance alone detract, in your mind,
10 from the weight that should be given that study?

11 A Yes, it detracts from the weight that should be given
12 it, certainly, but, you know, again, this is why one
13 looks at the weight of all of the evidence.

14 We'll get shortly to the Svendsen paper, which
15 basically shows the same kind of thing. The authors
16 are quite appropriate to state clearly the limitations
17 of their study. And when authors do that, that makes
18 me actually consider them more carefully because it
19 means the authors are not trying to pull the wool over
20 your eyes with something that isn't well-documented.

21 You're always limited by the number of subjects
22 in your study, especially if you're following over
23 long periods of time, you're retention rate and that
24 sort of thing. And one study doesn't prove a point
25 beyond a shadow of a doubt, but it, in this case, is

1 event-free survival?

2 A Yeah, survival, so they're looking for death.

3 Q And the follow-up interval of the studies was
4 different?

5 A Yes, it certainly was different.

6 Q Did the Svendsen article try to replicate the event-
7 free survival reported by Foliart?

8 A Well, it certainly didn't have exactly the same design
9 because it was looking for death, not periods of
10 remission, but the -- they clearly believe that they
11 replicated results that were -- supported the
12 hypothesis that was generated in the Foliart study.
13 So, you know, they say in conclusion, this study is
14 generally consistent with previous findings, however
15 it's not the same -- exactly the same study, and it's
16 still small numbers of cases. So they also
17 acknowledge limitations to their study, but they
18 designed the study basically to be a replication of
19 Foliart, albeit in a different country so they didn't
20 have exactly the same kinds of data, but they get a
21 result that is consistent with the hypothesis that was
22 generated in the Foliart study.

23 Q And the conclusion of the Svendsen article was that in
24 all the increase is still based on small numbers and
25 the biological mechanism to explain the findings is

1 certainly relevant.

2 Q Right. And actually, the last sentence -- the next
3 sentence of this paragraph says that independent
4 confirmation is needed and also says that the author's
5 findings can be viewed only as hypothesis-generating.

6 And is it, in fact, the case that the scientific
7 or the weight to be reported on any study depends in
8 part upon the capacity to replicate the findings of
9 that report?

10 A Yes, and actually if you look at Number 14, the
11 Svendsen study, they state right up front that the
12 Foliart study was done and seemed to show a shorter
13 remission period and that they wanted to try to
14 replicate that study, which they did. And so it is
15 not just a single study that demonstrates this
16 shortening of the remission period, but one done in
17 the U.S., one done in Sweden.

18 Q So the Foliart article, by its own terms, did nothing
19 more than generate a particular hypothesis, correct?

20 A That's correct, yes.

21 Q And then the Svendsen article, which is Exhibit 14,
22 first of all, had a different end point than the
23 Foliart study; did it not?

24 A Yes.

25 Q And the Svendsen article end point was survival not

1 not known, correct?

2 A That is correct. Again, that's a responsible
3 statement of the limitations of the study.

4 Q Have there been further efforts to replicate or
5 confirm the Foliart and Svendsen studies?

6 A There was one paper that I regret not having mentioned
7 in my report. I did mention it earlier. It's --
8 whose author was Lerchi or something like that. I
9 have it here. The issue was that -- Lerchi, L-e-c-h-i
10 (sic). This is a 2015 paper, and its title is, Tumor
11 Promotion by Exposure to Radiofrequency
12 Electromagnetic Migration --

13 Q I'm sorry, Doctor, you're going to have to repeat that
14 for Melissa, at a slower rate.

15 A The first author is Lerchi, L-e-r-c-h-i, and the
16 publication is entitled, Tumor Promotion by Exposure
17 to Radiofrequency Electromagnetic -- Electromagnetic
18 Fields Below Exposure Limits for Humans. And this was
19 not a study in humans. It was of mice, but they
20 looked to -- they saw a clear dose response curve, the
21 outcome was lymphomas in the exposed animals of -- it
22 was significantly higher than sham-exposed animals, in
23 addition lymphomas were also found to be significantly
24 elevated by exposure.

25 Q You said that's Lerchi, what year?

1 A 2015.

2 Q Is that one of the articles that you provided today?

3 A No, it is not. I should have provided that. I guess

4 I didn't mainly because it wasn't human, but it is

5 consistent with the other findings. And in this case,

6 in a mouse study, you can do a clear dose response

7 relationship. And that's what they have that the

8 human studies really didn't provide.

9 Q Okay. Do you have the -- your file from the PUC case

10 still at the ready there?

11 A Which case?

12 Q The Maine PUC case?

13 A Yes, yes.

14 Q I want to ask you -- I want to go through the email

15 from Mr. Friedman to you.

16 A Yes.

17 Q And I haven't had a chance to print this all and get

18 it marked yet, but we'll do that as another exhibit

19 the next time we take a break.

20 So this is an email from Mr. Friedman to you,

21 dated March 20, 2013, correct?

22 A Correct.

23 Q And this says the subject is Carpenter, DR, and I

24 assume that's data request responses. So do you

25 remember working with Mr. Friedman to provide data

1 responses to requests from the -- that were submitted

2 in the Maine Public Utilities Commission proceeding?

3 A I don't remember that, no. Obviously, I did, but I

4 don't recall.

5 Q So I'm not sure if this is Mr. Friedman's language or

6 if he's quoting someone else.

7 A I think all that's in the larger font must have been

8 taken from some other source.

9 Q Okay. So the first paragraph after the one that says,

10 Comments, references, and attachments, etc. --

11 A Yes.

12 Q -- EXM-017-001, while there are plenty of accounts of

13 electrical sensitivities from exposure to a wide

14 variety of RF sources, there is something unique to

15 smart meters that has triggered an often rapid

16 response in individuals with no prior sensitivities

17 and cause a worsening of symptoms for many with

18 preexisting sensitivities, See Conrad survey.

19 So this is information that Mr. Friedman was

20 providing you to assist you with your work in the

21 Public Utilities Commission case?

22 A That's correct.

23 Q And the Conrad survey was a survey of CMP customers'

24 self-reported symptoms?

25 A That is correct. And I do have in this file the

1 results of that survey, which I actually don't recall

2 at all, but I do have the reports of that survey. It

3 was self-reported -- self-reported surveys. They have

4 to be taken with a grain of salt, but in that case,

5 they were reporting that after smart meters were put

6 on hold, some 70 percent of people felt they suffered

7 adverse health effects.

8 Again, I'm a little skeptical of any self-report

9 study when you are asking someone if a specific event,

10 like a smart meter being placed on your house caused

11 you problems because the tendency is to feel that the

12 person asking you wants you to say yes.

13 Q Right.

14 A It gave me headaches and so there's an increased risk

15 of getting that kind of information. In other words,

16 I don't see this as a properly-designed study where

17 one would get injected results. Nevertheless, there

18 was this report that many people developed responses

19 that they considered adverse.

20 Q Did you review the Conrad survey when you were

21 preparing your report in this case?

22 A I have absolutely no recollection of my preparing a

23 report in this case. I am not even sure I did prepare

24 a report. This may have only been oral testimony.

25 Q No, I'm sorry. In -- what I meant to say was the case

1 we're here to talk about today.

2 A No, I did not review this Conrad report. I had -- I

3 had totally forgotten about it.

4 Q Okay. And the reason I ask is that it is cited in the

5 list of references for your report, and I guess I have

6 to clarify, this is -- I'm sure this is just a

7 typographical error, but if we look at Exhibit 7,

8 fifth page after your signature, the date 28, October,

9 2012 appears. I assume that should be 28 October

10 2021?

11 A Yes, yes, that's clearly a mistake.

12 Q Yeah. And the third reference you will see is Conrad

13 Exhibit D, Smart Meter Health Effects, etc. It goes

14 on to talk about -- refer to that as an exhibit to the

15 prefiled testimony of Richard Conrad.

16 So you don't recall and believe, in fact, that

17 you did not refer to the Conrad survey in preparing

18 your report; is that true?

19 A Well, I know I didn't -- didn't review it. I am

20 trying to find where that reference is because -- yes.

21 Okay. So --

22 Q So let me ask you this, did Mr. Friedman work with you

23 to prepare this report?

24 A He gave me some advice, but he certainly didn't work

25 with me, but that must have come from him because I --

1 I have not reviewed that Conrad report and I didn't
2 even find it until you asked me to see if I had
3 anything in my file cabinets.
4 Q Do you remember what portions of -- it sounds like
5 Mr. Friedman is the one who provided you with a
6 reference to the Conrad survey. Did he provide you
7 with any of the other references --
8 A No.
9 Q -- that support this report?
10 A No, none of the other references.
11 Q Did Mr. Friedman author any other portions of your
12 report?
13 A Not to my recollection. As a matter of fact, I am not
14 even certain that he saw my report, but clearly I got
15 that reference from him or one of the other lawyers
16 because I did not have his report, and I do not at the
17 present time have his report.
18 Q On the section of the report -- of your report
19 starting on page 2, under the heading, This Case,
20 there are two paragraphs that talk about
21 Mr. Friedman's medical history, his legal claims, and
22 the purposes of the discrimination laws under which he
23 is suing. Did Mr. Friedman provide that information?
24 A Once again, which information are you talking about?
25 Q The heading -- the section entitled -- the two

1 paragraphs under the heading, This Case?
2 A This Case. Okay. Mr. Friedman certainly provided me
3 with the statement that he was challenging the --
4 Central Maine Power to force him to pay surcharges,
5 and then he listed the three different acts in which
6 he was making those charges. Yes, that came from
7 Mr. Friedman.
8 Q And the second paragraph, that section, as well?
9 A He certainly informed me that he was taking this
10 action on the basis of the Americans with Disabilities
11 Act, but the rest of that is my words. And, of
12 course, this is the same act which The Fay School was
13 built on, so that -- that was material that I knew
14 rather well.
15 Q Okay.
16 A But the specific thing about prohibiting imposition of
17 a surcharge, that obviously is relevant to
18 Mr. Friedman, not The Fay School personnel.
19 Q That's information that -- is that actually a section
20 of the report that was written by Mr. Friedman or did
21 he tell you something and you --
22 A No, he told me something, but that certainly is my
23 wording.
24 Q Okay. So going back to Mr. Friedman's email to you
25 from March 20, 2013, the paragraph that begins

1 EXAM-017-003 says, Swerdlow, S-w-e-r-d-l-o-w, is the
2 chairperson of the AGNIR 2003 report.
3 So do you know who Swerdlow is and what the AGNIR
4 is?
5 A Well, I know that Swerdlow is a British person that's
6 been active in this area, and the AGNIR was a report.
7 I do have a copy of it somewhere. It's a report
8 that's been heavily criticized by some people. I
9 don't actually recall much about it.
10 Q So is it fair to say -- I got sort of screen shots of
11 this email, so I haven't had a chance to go through
12 the whole thing yet, but it appears to me that this
13 email is Mr. Friedman sort of giving you suggestions
14 on how to structure and frame your testimony in the
15 Public Utilities Commission case?
16 A I think that's exactly right, yes.
17 Q Let me go back and find the rest of that. All right.
18 I guess I am not going to bother to go through the
19 rest of this email now. As I said, when we take a
20 break, I will mark it as an exhibit so we have it for
21 the record.
22 Can you take a look at your handwritten notes
23 about the case so I can ask you about those, as well?
24 A Yes.
25 Q Do you have that document?

1 A Yes, I do.
2 Q So it looks like your first -- and these are notes
3 that you made in connection with this case, not the --
4 not the PUC case, right?
5 A That's correct. This was my notes after a phone call
6 from Ed Friedman.
7 Q It says, Smart meters, opt out, I think it says,
8 disability claim; is that right?
9 A That's correct.
10 Q Have to pay fee monthly so shouldn't have to pay for
11 something you don't want under Americans with
12 Disabilities Act; is that right?
13 A Right.
14 Q Illegal surcharges, surcharges underlined, and then I
15 can't quite read the next paragraph. Can you read
16 that to me?
17 A Well, I am not sure I can either. Defense says, no
18 link between smart meters and Ed's cancer.
19 Waldenstrom's, Non-Hodgkin's, fatigue, bone and joint
20 pain. Ed must prove that having a smart meter
21 actually risks worsening his symptoms and cancer
22 prognosis.
23 Q Maybe progression?
24 A Progression, yes. ROS, written report due November 1.
25 Report would be about the impact of smart meters,

1 would increase risk of symptoms of Non-Hodgkin's?
 2 Does this increase or worsening -- does this increase
 3 or worsen Ed's symptoms, is laymen's terms a
 4 Non-Hodgkin's/Waldenstrom's, his rare diagnosis 2013,
 5 increased IGM levels.
 6 Q What does the ROS mean on the first page?
 7 A That's reactive oxygen species.
 8 Q And that was -- was that something that came to your
 9 mind as you were talking with Mr. Friedman, or was
 10 that something he suggested to you?
 11 A I don't recall, but I suspect that's something that
 12 came to my mind immediately.
 13 Q Let's keep plowing for now, and we will do the best we
 14 can and see how it comes out. We may have to take
 15 another break at some point.
 16 Let me ask you about Exhibit 15, which you have
 17 talked about a few times.
 18 A Yes.
 19 Q This was your report of the partial findings from the
 20 National Toxicology Program, Carcinogenesis Studies of
 21 Cell Phone Radiofrequency Radiation.
 22 What is HsD?
 23 A It's related to the strain of rats.
 24 Q Okay. So what is the significance -- I take it you --
 25 I think you've mentioned many times that you thought

1 this was a particularly relevant piece of literature.
 2 What's your --
 3 A Yes, this -- I mentioned IARC, the International
 4 Agency for Research on Cancer didn't rate
 5 radiofrequency fields as proven human carcinogens and
 6 one of the main reasons for that was there had never
 7 been demonstration of cancers in animals exposed to
 8 cell phone frequencies. This was actually the
 9 largest, most extensive study ever done by the
 10 National Toxicology program.
 11 They demonstrated elevation of schwannomas, which
 12 are like those acoustic neuromas. Obviously the rats,
 13 who had whole body radiation, it wasn't just to their
 14 head, so this schwannoma of the heart is the same
 15 cancer as the acoustic neuroma of the auditory nerve.
 16 They found elevations in gliomas, as did the Ramazzini
 17 Institute report I talked about earlier. They clearly
 18 demonstrated DNA damage.
 19 Now, again, the intensity used here is like that
 20 that you would get from a cell phone, so it's
 21 certainly below the intensity that would cause tissue
 22 heating. They also found two other cancers, which
 23 hadn't previously been reported in humans, tumors of
 24 the adrenal gland and the -- I have forgotten the
 25 other one. But a very comprehensive study, to my

1 mind, just sets to rest forever the allegation that
 2 radiofrequency fields don't cause cancer.
 3 Q Again, we know that there is no allegation in this
 4 case that Mr. Friedman's cancer was caused by
 5 radiation, correct?
 6 A That is correct.
 7 Q So --
 8 A So I think the importance of this study and a number
 9 of the others was not that it was directly relevant to
 10 the disease that Mr. Friedman has, so the cancer that
 11 he has, but that it was directly relevant to the idea
 12 that exposure to radiofrequency fields cause disease.
 13 And in his case, the concern is that they will cause
 14 recurrence of his cancer at earlier periods of time
 15 than would occur if he were not exposed.
 16 Q And just to put a finer point on that, do you draw
 17 that conclusion because of the studies that pertain to
 18 reduction of remission time in children with leukemia?
 19 A That is correct. I think those studies are the
 20 evidence to support that -- that conclusion.
 21 Q And leukemia is a different disease than
 22 Waldenstrom's, correct?
 23 A Correct. But they're both diseases of the immune
 24 system.
 25 Q And is that overlap, if you will, or similarity

1 sufficient, in your mind, to say that the effects,
 2 which were shown in studies of children with leukemia,
 3 are transferable to an adult with Waldenstrom's?
 4 A Yes, I think that the -- there's reason for that and
 5 some of this comes from my own studies, not with
 6 electromagnetic fields, but with exposure to
 7 polychlorinated biphenyls. We have looked at rates of
 8 all of these cancers of the blood cells, the immune
 9 blood cells in relation to exposure to PCBs and what
 10 we find is basically all of the blood -- the white
 11 blood cell cancers are elevated in relation to
 12 exposure to PCBs. They're -- and that's been --
 13 that's been found in a lot of the lawsuits also with
 14 PCB exposure, Non-Hodgkin's disease.
 15 So they're not exactly the same, of course, but
 16 there's every reason to believe that the risk factors
 17 are common among the different kinds of cancer.
 18 Q When we look at your -- well, let me ask this
 19 question, if I understand your testimony correctly --
 20 let me strike that and start again.
 21 Is it your belief that evidence that RF exposure
 22 causes one kind of cancer is evidence that RF causes
 23 all kinds of cancer?
 24 A Let me think about that a moment. I do think that
 25 there is pretty good reason to believe that RF causes

1 every kind of cancer. Now, how strong is that
2 evidence, well, I would certainly say it's -- it's not
3 terribly strong because then every kind of cancer has
4 been studied, but in the IARC document, they certainly
5 list various kinds of cancers. I think just -- the
6 ones for which there's strong evidence are several
7 kinds of brain cancer, the auditory nerve cancer, the
8 breast cancer. There's some evidence for lung cancer
9 and gastrointestinal cancers. Most of the other
10 cancers that are less common have not been studied.

11 So I guess my answer to that question is, what I
12 believe is that I believe that all cancers are
13 increased by RF. What I can document scientifically
14 is certainly less than that because not all cancers
15 have been studied in relation to exposure, but enough
16 cancers have been so that it's a reasonable hypothesis
17 to think that radiofrequency radiation can increase
18 the risk of all kinds of cancer.

19 Q And can also exacerbate all kinds of cancer?

20 A That's correct, reduce the remission periods for all
21 kinds of cancer. Although, it's only leukemia that's
22 ever been studied.

23 Q And was that the proposition that you attempted to
24 convey to the Maine Public Utilities Commission when
25 you testified in that case?

1 Q Do you have a smart meter in your home?

2 A I do.

3 Q That's a risk that you're willing to assume, as well?

4 A Well, it's interesting, I almost mentioned this
5 earlier, but I wasn't sure this was a smart meter, but
6 I did have a visitor from Europe who had good meters
7 and we did take a good survey of the exposure in my
8 home, including that from the smart meter. I live in
9 a brick house, and it turns out that the radiation
10 from the smart meter did not significantly penetrate
11 the house. It -- it was a very high-intensity
12 exposure immediately adjacent to the smart meter
13 outside and then it fell off with distance, so that
14 there was no clear measurement of elevated intensity
15 if you got about 8 feet away from the smart meter.

16 You know, again, in my area, you're not asked if
17 you want to have a smart meter. It's just put on, and
18 I didn't even realize that we had one for a long time
19 until I looked at it, and someone did change the
20 meter. This is what's happening all over the place,
21 that these meters are being installed without asking
22 anybody's permission. They're installed by the
23 utilities and most people aren't even aware of them.

24 In my case, one of my concerns was that just
25 inside the house from the smart meter was the chair

1 A Well, I don't recall my testimony in that case, but if
2 asked I certainly would have made the same statement.
3 Of course, that was, what, four years, and there's --
4 there's stronger evidence now than there was four
5 years ago. But I think even at that time, I would
6 have seen the evidence strongly suggested that it
7 wasn't only leukemia that was increased by exposure to
8 magnetic fields.

9 Q Despite your belief that the risk of -- that all
10 cancer is increased or that the risk of all cancer is
11 increased by exposure to RF, you're willing to assume
12 the risk of having Wi-Fi in your home, correct?

13 A Correct.

14 Q Why is that?

15 A Well, again, one has to balance risk against benefit.
16 The Wi-Fi I have in my home, first of all, was ordered
17 by my wife, not me, and I argued about it a little
18 while. But it's -- it's part of our modern life, and
19 I certainly agree that there is an elevated risk of
20 cancers because of our exposure to Wi-Fi, but there's
21 elevated risk of cancers for so many things, some of
22 which we can control, some of which we cannot.

23 So the Wi-Fi -- the degree of elevation of risk
24 from Wi-Fi in my home I judge to be not greater than
25 the benefit that comes from having Wi-Fi in my home.

1 that my wife spends a lot of time in watching
2 television, but measuring there, there was no
3 elevation from the smart meter. There was an
4 elevation from the telephone, which was tied to a
5 network for deck phones, even though this was not a
6 deck phone, and that turned out to be a much more
7 significant source of exposure than others.

8 Now, as a result of that survey of my home, which
9 probably is going to get published, we certainly have
10 taken steps to move the -- the wireless router to a
11 more distant part of the house. The part of the house
12 that is further removed has very low RF levels. And
13 so you -- once you have the information, you can take
14 steps to -- to use the modern technology, but to
15 reduce the exposure.

16 Q Do you have the ability to opt out of the smart meter
17 in New York?

18 A I don't think you do. As a matter of fact, I know you
19 don't because people that have fought this have had
20 their electricity turned off. In my area, I -- in the
21 city of Albany, I don't think this has gotten any
22 attention at all. But I have been involved in
23 advising people in other parts of the state who
24 strongly objected and then were not able to have an
25 analogue meter put on, but had their electricity

1 turned off because they had by themselves replaced the
2 smart meter with an analogue meter, which the utility
3 didn't approve.

4 Q How long ago was it that you discovered that you had a
5 smart meter?

6 A Last summer.

7 Q Who's your electricity provider?

8 A Niagara Mohawk.

9 Q Did you -- I take it from your testimony that your
10 opinions in this case about the potential biological
11 harm that could occur from exposure to RF is based in
12 part on studies you have conducted on PCBs; is that
13 true?

14 A No, I don't think that's really true. I mean, I have
15 done a lot of work on PCBs and, of course, you always
16 learn from -- from what you do, and I always become
17 more convinced of something if it's studies that I
18 have done and know that it was done properly than if
19 it was just done by other people.

20 But I think my -- you know, to go back in my own
21 history, my first involvement with electromagnetic
22 fields was when I came to New York State as the
23 director of the Wadsworth Center for Laboratories and
24 Research, the laboratory part of the New York State
25 Department of Health, and two weeks before I arrived,

1 there had been a settlement between the Public Service
2 Commission and the New York power authority, the
3 state-owned utility, alleging that there were health
4 effects of magnetic fields from power lines. As the
5 new guy on the block, and I had worked for the defense
6 nuclear agency and had probably more knowledge of
7 ionizing and nonionizing radiation than most people, I
8 was put in charge of administering that program. I
9 worked with that for seven years. And at the end of
10 the time, we confirmed findings that exposure to
11 magnetic fields increased risk of childhood leukemia.
12 And we did a series of animal studies in different
13 laboratories in the U.S./Canada and found a number of
14 biological effects on the nervous system on animal
15 behavior. We did not find elevations in cancer in
16 rodents, but we didn't do as long a study as the NTP
17 study, but on the basis of all of those studies, it
18 was very clear to me that there are biological effects
19 of electromagnetic fields at low intensities that are
20 much below the state and the national standards. And
21 beyond that, this has never been my personal research,
22 so I depend on other research in this area.

23 A lot of my research on PCBs is sort of similar,
24 but I think my -- my major views on EMFs is that --
25 have been derived from the studies that I've either

1 administered or have reviewed from other people, and
2 there are certain similarities in the results with
3 PCBs, which are a much more dangerous exposure than I
4 find that electromagnetic fields are, but the patterns
5 are somewhat similar with regard to cancer.

6 Q All right. Have you, to your knowledge, ever had your
7 proposed opinion testimony excluded by any court?

8 A Yes, yes, it has both in PCBs and in EMF. I mentioned
9 earlier that the -- that strange situation in Montreal
10 where, as I was preparing to testify, they told me
11 that my views were not accepted and then told me to go
12 ahead and testify anyhow.

13 I think most of the other reports have not
14 been -- they've been for commissions and so forth
15 where my testimony wasn't excluded, it was just
16 ignored.

17 Q Right. Let's take a look at Exhibit 19, which is
18 probably a partial transcript of your testimony in The
19 Fay School case, the Massachusetts Wi-Fi case. Do you
20 have that, sir?

21 A Yes, I do.

22 Q Starting at page 26 of that, down on the bottom, first
23 of all, I know I only sent this to you yesterday, but
24 have you had a chance to look it over and do you feel
25 as though this partial transcript is pretty faithful

1 to what you actually sent?

2 A I'm sorry, I really haven't had a chance to --

3 Q That's all right.

4 A -- look it over. Page 26, did you say?

5 Q Yeah, bottom of page 26.

6 A Okay. I'm there.

7 Q You said one thing that I feel very strongly, and I
8 think is supported by the literature, is that it's the
9 intensity of the radiofrequency radiation, not whether
10 it's comes from Wi-Fi or from a cell phone, from a
11 cell tower, from a smart meter, it's the intensity and
12 the duration of exposure that are the critical
13 variables in EHS.

14 First of all, is that, in fact, your opinion?

15 A Yes, it is.

16 Q And then the next question --

17 A Well, I guess let me just qualify that answer, it is
18 intensity, it's duration, but, again, it's these rapid
19 rises and falls, this dirty electricity, if you want
20 to use that word, that is very important, and that's
21 not covered if you just talk about intensity and
22 duration.

23 Q Gotcha.

24 A Although, intensity and duration are certainly
25 important.

1 Q Okay. And then the next question is, And do you have
2 a particular intensity level that you designate as
3 safe versus non-safe? And you say, Well, I would only
4 have to go back to that precautionary level from the
5 BioInitiative Report. I think the short answer to
6 your question, though, is no. I don't have -- I think
7 when you have an exposure at whatever level that
8 triggers symptoms in a person, then that exceeds the
9 safety level, but that intensity of exposure is going
10 to vary greatly from individual to individual.

11 Is that -- does that accurately reflect your
12 opinion today?

13 A Yes, it does.

14 Q So --

15 A Let me elaborate on that a little bit.

16 Q Sure.

17 A You know, this is -- that's my opinion in terms of
18 individual to individual. But, again, as a public
19 health official, it's my firm belief that as a society
20 we should protect the most vulnerable, not just the
21 average person, and that -- that, which I feel
22 strongly about, is not captured in that sentence that
23 you just quoted.

24 Q Right. So what I read this to say, and please correct
25 me if I'm wrong, is that you have no way of knowing

1 not a single experimental study on cells. It was a
2 review article of 100 studies from different
3 laboratories that looked to see how many of that 100
4 studies demonstrated that radiofrequency radiation
5 increased reactive oxygen species. The answer is that
6 93 of that 100 studies clearly demonstrated increases
7 in reactive oxygen species.

8 So I think the point is, I think this has been so
9 well-established that I perhaps didn't state it as
10 clearly as I should have. There's a huge body of
11 evidence that radiofrequency radiation triggers the
12 generation of reactive oxygen species. It's been seen
13 in many different laboratories and different cells,
14 and I consider that to be very well-established.

15 Q Okay. So that is -- so can you just point me to the
16 language in the Yakymenko article that you're
17 referring to?

18 A Well, if you look in the -- just in the abstract it
19 says, Out of 100 currently available peer-reviewed
20 studies dealing with oxidative effects of
21 low-intensity RFR, in general 93 confirmed that RFR,
22 that being radiofrequency radiation, induces oxidative
23 effects in biological systems.

24 Q Okay. And what does that say -- what do those 93
25 studies say, if anything, about the actual impact of

1 what exposure, if any, would cause harm to any
2 particular individual who's exposed to RF; is that
3 true?

4 A That is true.

5 Q So exposure that could be completely benign to one
6 person might be mildly harmful to another and might be
7 seriously harmful to another, true?

8 A True.

9 Q And we don't know where Ed Friedman falls in that
10 spectrum, do we?

11 A That is correct.

12 Q All right. I think I am going to make one last try to
13 get those documents from Dropbox, unless something has
14 happened in the last little bit.

15 (Whereupon there was a break in the deposition at
16 3:30 p.m. and the deposition reconvened at 3:52 p.m.)

17 MR. MERRILL: Dr. Carpenter would like to clarify
18 one aspect of his study regarding the Yakymenko study.

19 MR. TAINTOR: Sure.

20 BY MR. TAINTOR:

21 Q All right. So, Doctor, why don't you -- we've had a
22 little break, and I guess you've had a chance to speak
23 with Attorney Merrill and Mr. Friedman --

24 A Well, I guess there was a concern that I didn't really
25 discuss what the Yakymenko study really was. It was

1 RF on human health or human disease?

2 A Well, most of these are studies of isolated cells, so
3 they're not directly relevant to human health, but I
4 think it adds to this overwhelming body of evidence
5 that radiofrequency radiation generates reactive
6 oxygen species, triggers oxidative damage and stress,
7 and that is consistent with what I said is the general
8 hypothesis of most people working in the field is
9 that these reactive oxygen species are the primary
10 mechanism whereby all of the various health effects
11 are caused.

12 Q And do those studies tell us anything about whether
13 exposure to RF at the level that is emitted by a smart
14 meter causes oxidative stress?

15 A Yes, I think they do. Now, again, you've got 100
16 studies so all of them are slightly different,
17 different intensities applied, but the great majority
18 of them demonstrate the development of reactive oxygen
19 species.

20 Now, the waveforms were not those of smart
21 meters, if I recall correctly, in none of these cells,
22 but they show the same effect of various intensities,
23 all nonthermal levels of RFR.

24 Q Okay. So as you -- as you look through these studies
25 -- so are these the ones that are listed in Table 2,

1 are these the studies that -- the 93 studies?

2 A I think the things in Table 2 are the 100 studies, but

3 you see they're all in -- they're from different

4 laboratories. They're on different cell types.

5 They're at various intensities. And this is why --

6 this is what I like to see, you look at the weight of

7 evidence from multiple groups, looking at slightly

8 different parameters on the same general subject, and

9 this shows you get consistency of results.

10 Q What is the -- so Table 2, according to this caption,

11 consists of publications which reported positive

12 findings on oxidative stress caused by RFR exposure of

13 animals and plants --

14 A Yes.

15 Q -- correct? Most of these are studies of rats, most

16 all, right?

17 A Yes, Table 1 is cells. Table 2 is primarily rats,

18 some things are guinea pigs.

19 Q Right.

20 A Some things are flies. But, again, the point is --

21 some are rabbits. The point is, there is a

22 consistency of there being generation of reactive

23 oxygen species.

24 Q Right. But what -- and I understand you're telling me

25 that these exposures can produce reactive -- or

1 generate reactive oxygen species, but which of these

2 RFR exposures are sufficiently similar in intensity to

3 smart meter exposure to be relevant in this case?

4 A I don't think we can -- we can really say that. Now,

5 of course, as I said earlier in terms of the smart

6 meter in my house, it totally depends on how far away

7 from the smart meter you are. If you are very close,

8 if you have very high intensities, then you can

9 actually get tissue heating right up against the smart

10 meter, but people are not standing up against a smart

11 meter. So the intensity varies over a large range

12 depending on distance away.

13 So I would say without going through the results

14 on each study that almost all of these studies are

15 relevant to smart meters, depending on how close you

16 are to the meter.

17 Q Well, I mean -- and I don't want to argue with a

18 scientist because I'm not one, but, for example, if we

19 look at the Ilhan study, I-I-h-a-n, study from 2004 in

20 Table 2, do you see where I am?

21 A Yes.

22 Q That talks about exposing a rat to 900 megahertz from

23 a cell phone for 1 hour a day for 7 days.

24 A Yes.

25 Q That's very, very different from exposing a human

1 being to a -- the RF from a smart meter for any period

2 of time, isn't it?

3 A That's correct, but what they were measuring there was

4 a -- MDA is a metabolite of -- it's an indication of

5 oxidative stress. And this is one of the markers in

6 those Belpomme studies that we talked about earlier in

7 people that show electrohypersensitivity. They're

8 excreting more of this MDA.

9 So I don't think any of these are exactly the

10 waveform that we have from a smart meter, but they are

11 radiofrequency radiation of various intensities and

12 coming from various laboratories. So that's the only

13 point I would make about the study, that there is a

14 consistency in the findings that radiofrequency

15 radiation causes oxidative stress by --

16 THE COURT REPORTER: I'm sorry, can you say that

17 again?

18 THE WITNESS: I said, there is a consistency in

19 the studies that radiofrequency radiation generates

20 reactive oxygen species and oxidative stress.

21 THE COURT REPORTER: Thank you very much.

22 BY MR. TAINTOR:

23 Q But there is not a consistency in the studies, based

24 on this article, to support the proposition that

25 radiofrequency of the intensity or duration that comes

1 from a smart meter generates reactive oxygen species

2 or oxidative injury, true?

3 A It's true that none of these studies use smart meter

4 frequencies, that is correct.

5 Q Not only do they not use smart meter frequencies, but

6 they also don't have similar intensity or duration?

7 A That is correct.

8 Q So you can't really draw any inferences from this

9 article that are directly relevant to Mr. Friedman's

10 situation with a smart meter outside of his house?

11 A Well, I don't think I agree with that, but I certainly

12 agree that the waveforms are not exactly the same as a

13 smart meter, but I think again what I would look at is

14 the weight of the evidence. And the only point from

15 this article is that in many studies, you can get

16 evidence of generation of reactive oxygen species from

17 RF radiation. And I wouldn't go past that to say this

18 is specifically for -- specific for smart meters.

19 Q Or for Mr. Friedman?

20 A Or for Mr. Friedman.

21 Q Do you have -- I was wondering about the one case in

22 which I think you said you had been excluded, and I

23 think there was only one, that was the Quebec case,

24 right?

25 A Yes.

<p>1 Q Do you have a file on that case and do you happen to</p> <p>2 have a decision in that case addressing that issue?</p> <p>3 A No, I do not. I never did have.</p> <p>4 Q Okay. And do you know what jurisdiction that was in</p> <p>5 in the province of Quebec; do you recall?</p> <p>6 A That should have been in -- should have been listed in</p> <p>7 my --</p> <p>8 Q Let me see if I can find it.</p> <p>9 A I don't have that listed in my depositions list.</p> <p>10 Q Do you remember what kind of proceeding it was?</p> <p>11 A It was a proceeding in front of a panel of three</p> <p>12 individuals that were taking testimony on hazards of</p> <p>13 smart meters. It was -- it must have been a</p> <p>14 provincial committee, to the best of my recollection.</p> <p>15 Q A committee of the province?</p> <p>16 A And that was 10 years ago, so my memory may not be</p> <p>17 very accurate.</p> <p>18 Q You think it was probably, though, a committee of the</p> <p>19 provincial Government?</p> <p>20 A Yes.</p> <p>21 Q And I'm sorry, is that the Association Québécoise?</p> <p>22 A Yes.</p> <p>23 Q So Dominique Newman was the person that hired you?</p> <p>24 A Yes, that's correct.</p> <p>25 Q Okay. And lastly, I think, can you just catalog for</p>	<p>1 Utilities Commission?</p> <p>2 A I doubt very much that they were.</p> <p>3 Q What was the thing before the EPRI -- and just,</p> <p>4 Melissa, EPRI is an acronym, E-P-R-I.</p> <p>5 THE COURT REPORTER: Thank you.</p> <p>6 BY MR. TAINTOR:</p> <p>7 Q What was before the EPRI report?</p> <p>8 A This is a two-page thing -- well, actually, it's more</p> <p>9 than that. It's page 17 of 25, but it's -- it appears</p> <p>10 to be something from an advocacy organization, which</p> <p>11 gives a quote from me. It talks about the World</p> <p>12 Health Organization classifying electromagnetic fields</p> <p>13 as possible carcinogens, talks about cell phones. It</p> <p>14 gives a link to cancer, cell phones, children,</p> <p>15 legislation, technology. So, again, I think it's</p> <p>16 nothing I would have relied on.</p> <p>17 Q Do you think it's something that you reviewed and</p> <p>18 referred to forming your opinions before the PUC?</p> <p>19 A I doubt it.</p> <p>20 Q Okay.</p> <p>21 A If it's quoting me, it's obviously --</p> <p>22 Q That's authoritative right there, isn't it?</p> <p>23 A Absolutely.</p> <p>24 Q Okay.</p> <p>25 A Then there's a fairly long email from Bruce McLaughlin</p>
<p>148</p> <p>1 me -- I want to just know what we're -- what we might</p> <p>2 be missing from the Maine Public Utilities Commission</p> <p>3 file. I know you told me it was a pretty big file.</p> <p>4 Can you pull it out and sort of --</p> <p>5 A Yes.</p> <p>6 Q -- catalog the documents for me that are contained in</p> <p>7 that?</p> <p>8 A Right. The first thing is a draft order. It's a</p> <p>9 four-page document --</p> <p>10 Q Draft order --</p> <p>11 A This was ordering an audit of the provisions of a</p> <p>12 specific thing of the commission and setting a date</p> <p>13 for the time at which that audit should be prepared.</p> <p>14 Then I have a copy of a rather large document,</p> <p>15 which is the examiner's report containing</p> <p>16 recommendations of the commission's staff, although</p> <p>17 it's in the form of a draft commission order, it does</p> <p>18 not constitute commission action. I assume this is</p> <p>19 the product of that audit that was ordered.</p> <p>20 I have a document on risk valuation. This is,</p> <p>21 Take Caution with Cell Phones from the Epic Times. I</p> <p>22 have a copy of EPRI comments on the BioInitiative</p> <p>23 Report, which I'm sure were not complimentary.</p> <p>24 Q Are the documents you're referring to things that you</p> <p>25 relied on in your testimony to the Maine Public</p>	<p>150</p> <p>1 -- well, it's -- it's a one-page email, but then he's</p> <p>2 attached a document, which I clearly did review</p> <p>3 because I've got some underlines in it about the</p> <p>4 Federal Communications Commission and orders on RF</p> <p>5 fields. There's a section on specific comments to the</p> <p>6 testimony of David Carpenter, so this, again, is</p> <p>7 someone that's criticizing my presentation. Talks</p> <p>8 about the systemic review by Repacholi, which we've</p> <p>9 already discussed.</p> <p>10 So I think this is a critique of my testimony.</p> <p>11 Q So let me go back to the McLaughlin email. Can you --</p> <p>12 unless Attorney Merrill wants to have -- to vet it</p> <p>13 first -- maybe you can tell me, Bruce, if you feel the</p> <p>14 need to. I would like you to read it into the record</p> <p>15 unless Bruce tells you not to.</p> <p>16 MR. MERRILL: I'm sorry, who is doing the</p> <p>17 critique, David?</p> <p>18 THE WITNESS: Well, this is a -- it says,</p> <p>19 Attached is a copy of the lengthy rebuttal testimony</p> <p>20 that was filed by Exponent. So that's what all of</p> <p>21 these pages are is --</p> <p>22 MR. MERRILL: Okay.</p> <p>23 THE WITNESS: -- Exponent's rebuttal of my</p> <p>24 testimony.</p> <p>25 BY MR. TAINTOR:</p>

1 Q Okay. I misunderstood you. I thought you said that
 2 there was a lengthy email from Attorney McLaughlin.
 3 A I did say that, but I was mistaken.
 4 Q Okay.
 5 A The attachment was -- was the rebuttal.
 6 Q All the email says is, Here's Exponent's testimony?
 7 A Well, it goes on from that. It says, I will have an
 8 opportunity to cross-examine Dr. Bailey on Thursday on
 9 his rebuttal and would like any comments you may have
 10 on that. Generally speaking, please point out any
 11 glaring errors, misrepresentations, or faulty
 12 reasoning in his discussions of the science or
 13 particular studies that you notice in reviewing his
 14 rebuttal. Unrelated to your testimony, can you help
 15 me or point me to someone who can debunk Bailey's
 16 assertions that natural RF from human bodies and the
 17 earth are not different in kind from smart meter RF
 18 for purposes of considering health risks? With
 19 respect to Bailey's testimony about you on pages 36 to
 20 67 I have the following questions: On page 36 to 38,
 21 he criticizes the BioInitiative Report and cites
 22 critical reviews of the reports. Have there been any
 23 responses to these reviews or other commentaries
 24 defending the reports that would help me? On page 38
 25 to 42, he criticizes your reliance on metaanalyses,

152

1 Hardell, Carrubba, Kundi, and Moon, any misstatements
 2 here?
 3 Three, on page 45, he makes a point about
 4 exposure levels and dose response relationships, does
 5 this make sense?
 6 Four, on page 45 to 48, he criticizes your cell
 7 and radio tower cases referring to them as ecologic
 8 studies that are inferior to case control studies. He
 9 cites Marsonique (phonetic) 2008 and Elliott 2010.
 10 Any come back to this?
 11 Five, any comments on his critique on the cancer
 12 rate evidence on page 57 and 58?
 13 Thanks for your help.
 14 Q So one of the things that Attorney McLaughlin asked
 15 you about was whether you could debunk or point him to
 16 someone who could debunk Dr. Bailey's testimony about
 17 the radiofrequency emissions from the earth and from
 18 the human body being similar to those from smart
 19 meters; were you able to do that?
 20 A I don't recall. I don't have any -- I don't have a
 21 copy of any response I made to this. I certainly
 22 would have debunked those. There certainly are
 23 radiofrequency emissions from the human body, our
 24 nervous system, are muscles are electrical cells, they
 25 generate electricity, and that generates magnetic

1 fields. They're at quite different frequencies, but
 2 there -- there are obviously things that human life
 3 evolved with and cannot be considered to be hazardous.
 4 But I don't have any of my response here.
 5 Q Okay. So is there -- after that email and the
 6 Exponent testimony attached, are there more contents
 7 of that file?
 8 A Yes, there's the 126 Maine Legislature First
 9 Regulatory Session, which includes some documents on
 10 electric utility industry experience with geomagnetic
 11 disturbances. It's about a 10-page document, but
 12 nothing that I prepared. There is the law document,
 13 the Supreme Judicial Court sitting as the Law Court,
 14 Ed Friedman, et. al v. Maine Public Utilities
 15 Commission and Central Maine Power. Again, a 20 or so
 16 page double-spaced paper.
 17 There's a document, Power Logistic Solutions on
 18 Transients and Electric Power. I don't know what this
 19 is about.
 20 Q That's not something you recall focusing on or --
 21 A No, not at all. There's a PowerPoint from Niko
 22 Talamone (phonetic) from Finland, again nothing that I
 23 would have relied on particularly.
 24 There's an Exhibit D, Smart Meter Health Effects
 25 Survey and Report. This is -- I think this may be

154

1 that report that we were talking about earlier that on
 2 the -- the reported health effects of people after
 3 smart meters were put on their homes.
 4 Q The Conrad survey?
 5 A Yes. And then there's the testimony of William Bailey
 6 and Mykhaylo Shkolnikov whose testimony they gave in
 7 that case. I have an email from a Maria Powell, but
 8 that's not relevant to this case, but it's about smart
 9 meters.
 10 Q Who is Maria Powell and what did she say about smart
 11 meters?
 12 A I don't -- well, this is -- she's from a community
 13 based organization in Madison, Wisconsin. It happened
 14 to be filed away in this file.
 15 There's another email from someone from Mexico.
 16 This is a report of a student project that surveyed
 17 students on health effects of radiofrequency
 18 radiation. Again, that -- that was not particularly
 19 relevant to this case.
 20 There's my -- a copy of my prefiled testimony in
 21 this case.
 22 Q In this case being the PUC case?
 23 A The PUC case, yes. I don't know exactly what this is.
 24 This is from the lawyers and describes the various
 25 people that were going to be presenting expert witness

1 testimony in that case.
 2 Q Is that from Mr. McLaughlin?
 3 A That's from McLaughlin, yes.
 4 Q And can you tell me what that says?
 5 MR. MERRILL: I'm going to object to anything
 6 that the lawyer is sending him, Chris.
 7 BY MR. TAINTOR:
 8 Q Why don't we just get a general description --
 9 A Well, it's a listing of the expert witness testimony
 10 of Leonard Hardell, Jerry Phillips, Darius Lesintisky
 11 (phonetic), Coumb Lee -- De Coumb Lee (phonetic),
 12 Hersh Kumar, David Carpenter, Lloyd Morgan, William
 13 Rea, Richard Conrad. So it's a brief summary, one
 14 paragraph on each of us, what our backgrounds were,
 15 and what we would be -- what we -- what he would
 16 expect us to be testifying on.
 17 Q Gotcha.
 18 A There's an executive summary of the last AG MIR
 19 review. Again, that's probably something I put in the
 20 file. It wasn't directly relevant to the case.
 21 And then there is a letter to me from Bruce
 22 McLaughlin inviting me to -- this is the first letter
 23 inviting me to serve as the expert witness in this
 24 case, dated October 17, 2012.
 25 Q I understand Attorney Merrill has an objection to that

1 so I want to be careful about this, can you -- what's
 2 the length of the document?
 3 A It's a three-page letter.
 4 Q Does it provide factual information about the case?
 5 A Why don't I just read the first paragraph at least?
 6 Q Before you do that, check with Attorney Merrill to
 7 make sure he wants you to.
 8 MR. MERRILL: I don't want you to read anything,
 9 David, just give a synopsis of what it is.
 10 A Well, it describes the pending case, the various
 11 orders, background on when smart meters were
 12 installed, lists the experts that CMP were going to
 13 call, and invites me to serve as an expert witness in
 14 the case.
 15 MR. TAINTOR: Okay. So I guess, Bruce, my view
 16 would be, I think, that communications -- and I'll
 17 leave this to you guys to figure out, I don't need to
 18 fight about it on the record, but my understanding is
 19 that the Maine PUC follows the Maine Rules of
 20 Procedure, Maine Rules of Civil Procedure, so to the
 21 extent that there is factual information about the
 22 case contained in the letter, it would be
 23 discoverable, but why don't you, after the deposition,
 24 have Dr. Carpenter send you that and then you can
 25 decide whether you --

1 MR. MERRILL: That's fine.
 2 BY MR. TAINTOR:
 3 Q Is that pretty much everything in there,
 4 Dr. Carpenter?
 5 A That's it, yes.
 6 Q So I think the only things -- we've got that -- that
 7 potentially open piece, and then we have got a couple
 8 of articles that I think you mentioned that you
 9 thought were important, but that you had not produced
 10 and that was the Rea, R-a-e (sic) and possibly the
 11 Lamech, L-a-m-e-c-h --
 12 A I did produce the Lamech study.
 13 Q Oh, you did. Okay. So the Rea study, and I thought
 14 there was another one, Lerchi, L-e-r-c-h-i?
 15 A Yes.
 16 Q Are those the two studies that you thought were
 17 particularly important, but had not been produced?
 18 A Yes, that's right.
 19 Q So I don't expect it's going to be an issue, I don't
 20 know if, you know, how you want to do this, if you
 21 want to try to find those now and send them to me or
 22 if you want to potentially hold this open to revisit
 23 those issues in case, God forbid, there should be
 24 something particularly stunning in those articles. I
 25 just don't want to -- you know, if there's information

1 you relied on that I haven't had a chance to look at,
 2 I would be hesitant to close out the deposition
 3 forever without having the chance to ask questions on
 4 that.
 5 A Well, I can -- I can certainly try to find those. I
 6 don't think I have an electronic copy of the Rea
 7 study, so I might have to scan and send it to you.
 8 The other thing you asked for, you really want
 9 syllabi of the two courses I teach?
 10 Q Yeah, I think I do. Yeah.
 11 A Okay.
 12 Q If you can produce them.
 13 So, Doctor, to what extent do you believe the
 14 focus of your opinions in this case differs from the
 15 focus of the testimony you gave in the PUC litigation?
 16 A I don't think it differs in any major regard. I think
 17 that in the intervening, what is it, four or six
 18 years, there is new evidence that strengthens my
 19 confidence in the opinions I expressed then, but I
 20 don't think my opinions have changed in any
 21 substantive fashion.
 22 Q Okay. I think those are all my questions. I'll leave
 23 it there. I don't know if Mr. Merrill is going to do
 24 any cross-examination or not.
 25 MR. MERRILL: No.

MR. TAINTOR: No. Okay.

(The deposition was concluded at 4:25 p.m.)

SIGNATURE PAGE

I, DAVID O. CARPENTER, have read the foregoing pages of my transcript or have had the foregoing pages of my testimony read to me and have noted any changes in form or substance of my testimony, together with their respective corrections and the reasons therefore, on the following errata sheet(s).

DAVID O. CARPENTER, M.D.

(Date)

TO BE COMPLETED BY NOTARY PUBLIC OR ATTORNEY:

I, a Notary Public/Attorney in and for the State of Maine, hereby acknowledge that the above-named witness personally appeared before me, swore to the truth of the foregoing statements and affixed his/her signature above as his/her true act and deed.

(Date)

My commission expires:

CERTIFICATE

I, Melissa L. Merenberg, RPR, a Notary Public in and for the State of Maine, hereby certify that the within-named deponent was sworn to testify to the truth, the whole truth, and nothing but the truth, in the aforementioned cause of action.

I further certify that this deposition was stenographically reported by me and later reduced to print through computer-aided transcription and that the foregoing is a full and true record of the testimony given by the deponent.

I further certify that I am a disinterested person in the event or outcome of the above-named cause of action.

IN WITNESS WHEREOF, I subscribe my hand and affix my seal this 24th day of January, 2022.

/s/ Melissa L. Merenberg

MELISSA L. MERENBERG, RPR

NOTARY PUBLIC

Court Reporter

My commission expires: February 28, 2022.

ERRATA SHEET INSTRUCTIONS

Please note on the errata sheet below any changes in form or substance to your testimony contained in your deposition transcript. For each change, list the page and line number, the words you wish to change, the change, and the reason for the change; ex: Typo, wrong word, word omitted, etc. be sure to sign the errata sheet. You must also sign the signature page and have it notarized. Please return the errata sheet and signature page to the attorney mentioned on the cover letter.

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January 24, 2022

RE: Ed Friedman v. Central Maine Power Company.

Deposition of: David O. Carpenter, M.D.

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Enclosed please find a copy of your deposition taken on January 13, 2022, in the above-referenced matter. Within thirty (30) days, please read the transcript, indicating any errors on the enclosed errata sheet, and sign the signature page and errata sheet before a notary public. Please return the properly executed original signature page and errata sheet to:

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/	116:21	221 [1] - 86:3	5G [2] - 8:21, 65:17	AC [1] - 67:25
/s [1] - 160:19	147 [1] - 26:11	24 [3] - 54:18, 55:16, 163:4	6	accept [5] - 9:22, 58:8, 62:14, 97:20
0	15 [4] - 2:16, 38:4, 80:12, 127:16	24/7 [1] - 98:1	6 [10] - 2:12, 21:23, 24:19, 25:7, 25:8, 26:6, 26:14, 26:15, 26:18, 27:11	accepted [2] - 52:20, 137:11
0.01 [3] - 56:19, 57:6, 59:25	16 [3] - 2:9, 2:17, 94:3	24th [1] - 160:16	60 [5] - 31:7, 35:2, 67:2, 67:4, 90:19	accepting [1] - 15:7
0.1 [6] - 56:14, 57:5, 59:7, 60:9, 60:13, 64:8	17 [5] - 2:17, 54:20, 55:20, 149:9, 155:24	25 [1] - 149:9	67 [1] - 151:20	access [4] - 55:13, 62:23, 63:6, 109:20
0.6 [1] - 67:12	18 [3] - 2:10, 2:10, 2:18	26 [3] - 137:22, 138:4, 138:5		accommodated [1] - 39:13
001 [1] - 44:1	19 [2] - 2:18, 137:17	262 [1] - 16:15		accommodation [1] - 52:14
01 [1] - 57:13	1991 [4] - 34:9, 109:1, 109:4, 109:15	28 [3] - 122:8, 122:9, 160:24	7	according [1] - 143:10
04083 [1] - 163:2	1997 [3] - 26:4, 26:9, 26:24	281-4230 [2] - 1:25, 163:2	7 [8] - 2:12, 36:3, 102:11, 104:19, 105:1, 105:8, 122:7, 144:23	accounts [1] - 120:12
04112-4600 [1] - 163:17	1:01 [1] - 80:24	3	70 [1] - 121:6	accurate [3] - 18:22, 46:18, 147:17
	1:37 [1] - 80:24	3 [9] - 2:4, 2:10, 18:12, 67:11, 67:13, 82:15, 83:15, 102:18, 103:11		accurately [3] - 32:9, 100:10, 139:11
1	2	30 [5] - 34:17, 98:13, 98:17, 101:20, 163:11	8	achieve [1] - 57:4
1 [10] - 2:9, 16:17, 16:20, 17:2, 40:17, 87:15, 101:14, 126:24, 143:17, 144:23	2 [10] - 2:10, 17:2, 18:6, 82:10, 123:19, 142:25, 143:2, 143:10, 143:17, 144:20	30-second [1] - 21:15	8 [6] - 2:13, 19:13, 81:13, 86:16, 107:20, 133:15	acknowledge [5] - 71:25, 75:14, 85:13, 117:17, 161:18
10 [21] - 2:14, 3:25, 19:13, 21:6, 29:16, 29:25, 30:3, 34:2, 34:3, 35:7, 35:11, 58:2, 59:21, 59:24, 64:13, 74:12, 80:4, 87:8, 87:15, 107:21, 147:16	20 [9] - 2:19, 43:12, 45:9, 45:15, 87:9, 87:15, 119:21, 124:25, 153:15	300 [1] - 67:14	81 [1] - 2:13	Acknowledgements [2] - 114:4, 114:13
10-page [1] - 153:11	20-cv-00237 -JDL [1] - 1:3	36 [3] - 2:12, 151:19, 151:20	84 [1] - 2:13	acoustic [3] - 82:11, 128:12, 128:15
100 [7] - 32:3, 141:2, 141:3, 141:6, 141:19, 142:15, 143:2	2000 [1] - 80:1	38 [2] - 151:20, 151:24		acquired [1] - 39:19
107 [1] - 2:14	2003 [1] - 125:2	3:30 [1] - 140:16	9	acronym [1] - 149:4
10:12 [2] - 1:18, 3:3	2004 [1] - 144:19	3:52 [1] - 140:16	9 [4] - 2:13, 84:17, 86:3, 107:20	act [5] - 60:25, 107:10, 107:12, 124:12, 161:21
10:16 [1] - 4:7	2005 [2] - 28:7, 80:1	3G [1] - 65:19	900 [1] - 144:22	Act [3] - 36:22, 124:11, 126:12
10:18 [1] - 4:8	2007 [8] - 24:1, 24:15, 54:20, 55:21, 56:9, 56:12, 58:14, 58:25	4	93 [4] - 141:6, 141:21, 141:24, 143:1	acting [2] - 102:24, 104:15
10:49 [1] - 21:18	2008 [1] - 152:9	4 [14] - 2:11, 17:2, 21:23, 22:9, 22:10, 24:17, 24:23, 25:7, 25:13, 25:14, 25:18, 25:25, 26:21, 82:16	94 [1] - 2:17	ACTION [1] - 1:3
10:50 [1] - 21:18	2010 [2] - 24:6, 152:9	40 [1] - 2:20		action [9] - 8:12, 10:24, 10:25, 42:17, 46:20, 124:10, 148:18, 160:6, 160:14
11 [3] - 2:14, 80:4, 110:3	2011 [2] - 16:14, 77:20	404 [1] - 163:1	A	active [1] - 125:6
110 [1] - 2:14	2012 [13] - 24:2, 24:5, 24:15, 29:3, 30:2, 54:22, 55:16, 56:10, 56:18, 58:14, 77:21, 122:9, 155:24	42 [1] - 151:25	a.m [8] - 1:18, 3:3, 4:7, 4:8, 21:18, 21:19, 41:13	activities [1] - 66:10
112 [1] - 2:15	2013 [6] - 23:16, 43:12, 103:6, 119:21, 124:25, 127:4	43 [1] - 2:19	abbreviation [1] - 7:6	activity [1] - 66:18
116 [1] - 2:16	2015 [4] - 28:7, 84:18, 118:10, 119:1	45 [3] - 2:19, 152:3, 152:6	ability [6] - 30:13, 59:6, 92:21, 108:2, 114:25, 134:16	acts [2] - 106:5, 124:5
11:28 [1] - 41:13	2018 [1] - 110:4	4600 [1] - 163:17	able [9] - 41:4, 59:8, 62:11, 108:15, 109:10, 113:25, 114:20, 134:24, 152:19	actual [2] - 42:22, 141:25
11:46 [1] - 41:13	2021 [1] - 122:10	48 [1] - 152:6	above-named [2] - 160:13, 161:18	add [1] - 56:21
12 [4] - 2:15, 38:4, 80:4, 112:12	2022 [6] - 1:18, 3:3, 160:16, 160:24, 163:4, 163:10	4:25 [1] - 159:2	above-referenced [1] - 163:10	added [3] - 24:11, 24:12, 79:3
120 [1] - 99:19	207 [2] - 1:25, 163:2	4G [1] - 65:20	absolutely [9] - 9:20, 20:4, 41:4, 77:24, 83:9, 100:2, 100:5, 121:22, 149:23	addition [3] - 93:9, 110:2, 118:23
126 [1] - 153:8	21 [4] - 2:11, 2:11, 2:12, 2:19	5	abstract [1] - 141:18	additional [1] - 89:2
127 [1] - 2:16	22 [1] - 2:20	5 [17] - 2:11, 21:23, 24:18, 25:6, 29:16, 30:2, 34:2, 34:3, 35:6, 35:11, 38:4, 82:21, 101:25, 102:3, 102:6		addresses [2] - 14:16, 27:2
13 [4] - 1:17, 2:15, 3:3, 163:10		57 [1] - 152:12		
137 [1] - 2:18		58 [1] - 152:12		
14 [3] - 2:16, 116:10,				

<p>addressing [1] - 147:2</p> <p>adds [2] - 85:7, 142:4</p> <p>adequate [2] - 10:4, 33:13</p> <p>adjacent [2] - 51:22, 133:12</p> <p>administered [2] - 3:8, 137:1</p> <p>administering [1] - 136:8</p> <p>adopted [1] - 12:19</p> <p>adrenal [1] - 128:24</p> <p>adult [2] - 112:21, 130:3</p> <p>adults [2] - 37:20, 67:8</p> <p>advanced [4] - 29:4, 42:3, 48:18, 52:6</p> <p>advancing [1] - 72:2</p> <p>adverse [19] - 37:14, 45:23, 47:13, 55:14, 58:15, 58:22, 59:5, 69:24, 74:11, 77:12, 77:17, 79:5, 83:22, 85:8, 85:15, 94:22, 96:14, 121:7, 121:19</p> <p>adversely [1] - 64:5</p> <p>advice [3] - 78:14, 79:8, 122:24</p> <p>advises [1] - 74:10</p> <p>advising [1] - 134:23</p> <p>advisory [2] - 79:18, 79:21</p> <p>advocacy [7] - 12:4, 70:15, 71:7, 72:16, 72:19, 73:8, 149:10</p> <p>Advocate [5] - 68:22, 70:14, 71:15, 71:18, 71:20</p> <p>advocate [3] - 70:24, 70:25</p> <p>advocates [1] - 71:20</p> <p>affect [1] - 106:15</p> <p>affecting [1] - 102:22</p> <p>affiliated [3] - 11:24, 12:2, 12:3</p> <p>affix [1] - 160:16</p> <p>affixed [2] - 68:25, 161:20</p> <p>aforementioned [1] - 160:6</p> <p>Africa [1] - 76:4</p> <p>AG [1] - 155:18</p> <p>age [2] - 58:7, 62:19</p> <p>agencies [1] - 41:18</p> <p>agency [2] - 12:13, 136:6</p> <p>Agency [2] - 111:3, 128:4</p> <p>aggregate [3] - 66:1,</p>	<p>66:2, 103:15</p> <p>AGNIR [3] - 125:2, 125:3, 125:6</p> <p>ago [18] - 3:16, 12:9, 17:15, 18:20, 19:13, 21:6, 26:21, 29:25, 30:18, 34:17, 45:17, 46:9, 57:16, 70:12, 111:7, 132:5, 135:4, 147:16</p> <p>agree [13] - 7:25, 8:1, 75:5, 77:25, 78:5, 78:8, 80:9, 80:15, 82:18, 92:5, 132:19, 146:11, 146:12</p> <p>agreed [1] - 84:21</p> <p>agrees [1] - 43:17</p> <p>ahead [3] - 21:2, 48:4, 137:12</p> <p>AHM [1] - 50:4</p> <p>aided [1] - 160:9</p> <p>air [4] - 58:8, 58:9, 106:2, 107:6</p> <p>airborne [4] - 102:19, 103:22, 104:10, 107:9</p> <p>al [3] - 2:15, 50:7, 153:14</p> <p>Albany [4] - 8:25, 21:12, 74:18, 134:21</p> <p>albeit [1] - 117:19</p> <p>allegation [2] - 129:1, 129:3</p> <p>allege [1] - 83:5</p> <p>alleged [1] - 45:23</p> <p>alleging [2] - 111:21, 136:3</p> <p>allow [3] - 47:9, 76:22, 76:24</p> <p>allowed [1] - 99:25</p> <p>almost [12] - 9:13, 17:20, 38:2, 38:10, 57:7, 59:17, 65:20, 69:21, 86:15, 91:6, 133:4, 144:14</p> <p>alone [2] - 115:7, 115:9</p> <p>alphabetical [2] - 26:8, 26:16</p> <p>AM [1] - 62:1</p> <p>Americans [3] - 36:21, 124:10, 126:11</p> <p>AMI [1] - 29:9</p> <p>amount [3] - 57:23, 66:18, 91:23</p> <p>analogous [1] - 95:4</p> <p>analogue [4] - 36:23, 38:18, 134:25, 135:2</p> <p>analogy [1] - 29:21</p> <p>analyze [1] - 68:23</p>	<p>Anderson [1] - 81:8</p> <p>anecdotal [1] - 33:12</p> <p>animal [2] - 136:12, 136:14</p> <p>animals [7] - 28:17, 111:11, 111:12, 118:21, 118:22, 128:7, 143:13</p> <p>answer [18] - 6:11, 15:17, 15:18, 32:7, 42:10, 42:25, 55:6, 64:11, 64:14, 67:18, 70:6, 73:18, 87:13, 100:11, 131:11, 138:17, 139:5, 141:5</p> <p>answered [2] - 52:3, 71:24</p> <p>answering [1] - 5:3</p> <p>antennae [4] - 102:24, 104:15, 106:5, 107:11</p> <p>anyhow [1] - 137:12</p> <p>apart [4] - 13:10, 32:7, 41:15, 100:7</p> <p>apartment [1] - 46:5</p> <p>apologize [5] - 42:13, 52:2, 54:16, 70:10, 70:11</p> <p>appear [2] - 25:1, 79:4</p> <p>APPEARANCES [1] - 1:20</p> <p>appeared [1] - 161:19</p> <p>appearing [1] - 26:19</p> <p>application [3] - 79:12, 79:15, 79:24</p> <p>applied [1] - 142:17</p> <p>apply [1] - 70:20</p> <p>appoint [1] - 78:24</p> <p>appointed [2] - 75:5, 78:25</p> <p>appreciable [2] - 59:14, 60:8</p> <p>appreciate [2] - 63:8, 92:23</p> <p>approach [1] - 69:8</p> <p>appropriate [9] - 31:6, 56:13, 56:14, 59:7, 72:20, 75:7, 78:1, 114:22, 115:16</p> <p>approval [1] - 75:24</p> <p>approve [2] - 29:8, 135:3</p> <p>approved [2] - 48:18, 80:2</p> <p>area [11] - 6:19, 11:12, 15:4, 86:24, 86:25, 92:5, 125:6, 133:16, 134:20, 136:22</p> <p>argue [1] - 144:17</p> <p>argued [1] - 132:17</p>	<p>arguing [2] - 8:6, 8:9</p> <p>arrived [1] - 135:25</p> <p>Article [6] - 2:13, 2:13, 2:14, 2:14, 2:15, 2:17</p> <p>article [51] - 13:6, 25:15, 26:9, 26:18, 26:19, 26:24, 27:15, 27:20, 27:24, 28:3, 35:15, 81:12, 81:17, 83:20, 83:22, 84:9, 84:17, 84:24, 87:18, 93:14, 93:16, 93:21, 94:3, 94:5, 94:6, 94:23, 95:9, 95:16, 95:24, 96:19, 107:22, 109:16, 109:21, 110:3, 110:5, 111:15, 112:2, 112:12, 113:15, 114:3, 114:10, 116:18, 116:21, 116:25, 117:6, 117:23, 141:2, 141:16, 145:24, 146:9, 146:15</p> <p>articles [12] - 11:7, 24:6, 25:20, 27:10, 32:16, 38:24, 95:11, 109:15, 119:2, 157:8, 157:24</p> <p>articulated [1] - 64:9</p> <p>ascribe [1] - 101:7</p> <p>aside [1] - 74:17</p> <p>asleep [1] - 98:13</p> <p>aspect [1] - 140:18</p> <p>assembled [2] - 23:25, 24:14</p> <p>assertions [1] - 151:16</p> <p>assess [1] - 9:18</p> <p>assigning [1] - 9:15</p> <p>assignments [3] - 10:7, 75:22, 76:3</p> <p>assist [1] - 120:20</p> <p>associated [2] - 21:24, 89:7</p> <p>association [2] - 27:12, 28:11</p> <p>Association [1] - 147:21</p> <p>associations [3] - 27:8, 28:21</p> <p>assume [7] - 40:24, 106:25, 119:24, 122:9, 132:11, 133:3, 148:18</p> <p>assumed [1] - 53:5</p> <p>assuming [1] - 17:17</p>	<p>assumption [2] - 85:14, 106:21</p> <p>assumptions [1] - 14:24</p> <p>assure [1] - 69:11</p> <p>atmosphere [1] - 68:10</p> <p>ATP [1] - 91:16</p> <p>attached [4] - 23:21, 98:13, 150:2, 153:6</p> <p>Attached [1] - 150:19</p> <p>attachment [1] - 151:5</p> <p>attachments [2] - 43:25, 120:10</p> <p>attempted [1] - 131:23</p> <p>attention [3] - 18:1, 64:23, 134:22</p> <p>ATTORNEY [1] - 161:16</p> <p>Attorney [11] - 43:16, 44:5, 44:9, 44:13, 45:2, 140:23, 150:12, 151:2, 152:14, 155:25, 156:6</p> <p>attorney [1] - 162:10</p> <p>attorneys [14] - 7:5, 7:16, 8:5, 8:7, 8:13, 10:14, 10:18, 10:20, 10:24, 11:3, 12:11, 12:15, 44:16</p> <p>attributable [2] - 115:7, 115:9</p> <p>attributed [2] - 82:23, 83:16</p> <p>audit [3] - 148:11, 148:13, 148:19</p> <p>auditory [2] - 128:15, 131:7</p> <p>Australia [2] - 32:20, 73:15</p> <p>author [9] - 24:24, 25:16, 54:14, 75:10, 81:16, 95:25, 118:8, 118:15, 123:11</p> <p>author's [1] - 116:4</p> <p>authored [3] - 54:19, 55:19, 81:13</p> <p>authoritative [1] - 149:22</p> <p>authority [1] - 136:2</p> <p>authors [10] - 9:24, 54:10, 80:16, 82:4, 113:16, 113:19, 114:23, 115:15, 115:17, 115:19</p> <p>availability [1] - 5:16</p> <p>available [2] - 4:4, 141:19</p> <p>average [3] - 90:4,</p>
---	--	---	--	--

<p>90:9, 139:21</p> <p>avoid [3] - 62:3, 62:14, 70:23</p> <p>aware [10] - 11:25, 27:9, 27:11, 30:5, 44:16, 64:19, 72:7, 72:9, 72:14, 133:23</p>	<p>beings [2] - 59:14, 95:22</p> <p>belief [4] - 99:1, 130:21, 132:9, 139:19</p> <p>below [8] - 59:1, 59:23, 60:4, 74:11, 111:13, 128:21, 136:20, 162:2</p> <p>Below [1] - 118:18</p> <p>Belpomme [8] - 2:13, 75:10, 81:12, 94:12, 95:24, 95:25, 96:11, 145:6</p> <p>benefit [7] - 49:22, 58:6, 59:4, 72:6, 75:23, 132:15, 132:25</p> <p>benefits [3] - 76:8, 76:9, 76:10</p> <p>benign [1] - 140:5</p> <p>best [8] - 55:9, 58:10, 59:6, 90:20, 90:24, 95:11, 127:13, 147:14</p> <p>better [3] - 25:23, 63:15, 108:25</p> <p>between [23] - 16:12, 20:7, 20:8, 27:8, 27:12, 38:4, 44:17, 44:18, 56:11, 57:9, 59:19, 60:22, 61:3, 62:12, 71:1, 79:21, 87:8, 91:1, 114:6, 114:16, 126:18, 136:1</p> <p>beyond [4] - 86:24, 86:25, 115:25, 136:21</p> <p>bias [15] - 71:16, 71:17, 71:25, 72:8, 76:19, 76:23, 77:3, 77:5, 78:7, 78:17, 80:8, 80:18, 113:23, 113:24, 114:2</p> <p>biased [5] - 69:7, 69:16, 76:25, 78:13, 80:7</p> <p>biases [1] - 113:4</p> <p>big [2] - 42:24, 148:3</p> <p>bind [1] - 61:1</p> <p>Bioelectricity [2] - 109:6, 109:16</p> <p>Biolnitiative [25] - 11:10, 23:7, 24:1, 24:3, 24:10, 53:17, 53:22, 54:8, 54:18, 54:21, 55:17, 56:12, 64:9, 67:10, 72:7, 72:12, 72:16, 73:8,</p>	<p>73:12, 73:17, 80:11, 81:23, 139:5, 148:22, 151:21</p> <p>biological [17] - 23:10, 55:14, 57:1, 57:21, 58:15, 60:3, 60:14, 61:10, 61:24, 84:12, 98:3, 117:25, 135:10, 136:14, 136:18, 141:23</p> <p>Biological [3] - 2:11, 22:10, 22:23</p> <p>biologically [1] - 96:21</p> <p>biostatistics [1] - 6:17</p> <p>biphenyls [2] - 60:21, 130:7</p> <p>birth [1] - 61:19</p> <p>bit [13] - 6:22, 8:3, 12:24, 31:5, 32:8, 34:4, 42:14, 56:11, 63:9, 81:1, 107:22, 139:15, 140:14</p> <p>bizarre [1] - 49:19</p> <p>blame [3] - 30:10, 30:19, 109:9</p> <p>blind [1] - 34:13</p> <p>blinded [3] - 31:3, 31:12, 108:1</p> <p>block [1] - 136:5</p> <p>blood [6] - 95:25, 96:5, 130:8, 130:9, 130:10, 130:11</p> <p>blue [1] - 10:23</p> <p>bodies [2] - 68:16, 151:16</p> <p>body [22] - 9:9, 31:23, 32:11, 32:17, 65:5, 75:4, 78:25, 80:9, 85:7, 91:5, 91:9, 91:14, 91:16, 91:17, 91:22, 91:25, 92:15, 128:13, 141:10, 142:4, 152:18, 152:23</p> <p>bone [2] - 40:15, 126:19</p> <p>book [1] - 54:11</p> <p>books [1] - 9:25</p> <p>bother [1] - 125:18</p> <p>bottom [4] - 44:2, 114:12, 137:22, 138:5</p> <p>boundary [4] - 59:19, 60:22, 61:3, 62:12</p> <p>Box [2] - 163:1, 163:17</p> <p>bra [1] - 65:9</p> <p>brain [8] - 57:25, 65:6, 83:23, 93:5, 93:8,</p>	<p>94:19, 110:22, 131:7</p> <p>break [25] - 4:6, 5:7, 5:8, 5:10, 5:14, 17:1, 20:4, 20:5, 21:15, 21:17, 32:7, 41:7, 41:12, 43:15, 44:8, 80:23, 83:14, 90:24, 90:25, 100:7, 119:19, 125:20, 127:15, 140:15, 140:22</p> <p>breaks [1] - 91:10</p> <p>breast [2] - 65:8, 131:8</p> <p>brick [3] - 86:20, 106:10, 133:9</p> <p>brief [8] - 31:22, 87:7, 87:13, 87:14, 97:17, 97:25, 98:1, 155:13</p> <p>briefe [1] - 99:16</p> <p>British [2] - 48:25, 125:5</p> <p>brought [2] - 19:3, 30:11</p> <p>Bruce [14] - 1:21, 4:3, 16:4, 16:5, 16:6, 17:13, 17:24, 43:1, 83:14, 149:25, 150:13, 150:15, 155:21, 156:15</p> <p>building [8] - 31:23, 32:11, 32:17, 102:24, 104:15, 105:17, 106:4, 106:23</p> <p>built [4] - 70:17, 74:24, 78:17, 124:13</p> <p>built-in [2] - 70:17, 74:24</p> <p>bunch [2] - 48:12, 69:23</p> <p>bureau [1] - 74:21</p> <p>burst [1] - 87:10</p> <p>bursts [7] - 31:21, 97:19, 97:21, 97:23, 98:14, 98:15</p> <p>buzzing [1] - 98:4</p> <p>BY [19] - 3:14, 4:9, 21:20, 22:19, 41:14, 45:13, 80:25, 100:15, 102:17, 103:19, 104:2, 105:6, 140:20, 145:22, 149:6, 150:25, 155:7, 157:2, 161:16</p>	<p>20:11</p> <p>cabinets [2] - 35:22, 123:3</p> <p>California [5] - 7:18, 8:2, 10:15, 12:10, 33:4</p> <p>Cancer [2] - 111:4, 128:4</p> <p>cancer [51] - 36:16, 38:1, 38:22, 39:24, 40:3, 57:25, 61:19, 62:5, 65:8, 66:25, 67:7, 81:24, 83:24, 94:19, 99:14, 99:17, 99:18, 99:19, 99:20, 104:1, 110:7, 110:22, 111:11, 111:12, 112:10, 113:2, 126:18, 126:21, 128:15, 129:2, 129:4, 129:10, 129:14, 130:17, 130:22, 130:23, 131:1, 131:3, 131:7, 131:8, 131:18, 131:19, 131:21, 132:10, 136:15, 137:5, 149:14, 152:11</p> <p>cancers [21] - 36:5, 65:6, 67:2, 67:3, 110:20, 111:20, 112:5, 112:7, 112:22, 128:7, 128:22, 130:8, 130:11, 131:5, 131:9, 131:10, 131:12, 131:14, 131:16, 132:20, 132:21</p> <p>cannot [6] - 59:12, 59:19, 62:2, 62:14, 132:22, 153:3</p> <p>capacity [1] - 116:8</p> <p>caption [2] - 114:13, 143:10</p> <p>captioned [1] - 104:23</p> <p>captured [2] - 74:3, 139:22</p> <p>carbohydrates [1] - 61:17</p> <p>Carcinogenesis [1] - 127:20</p> <p>carcinogens [3] - 111:8, 128:5, 149:13</p> <p>careful [2] - 69:8, 156:1</p> <p>carefully [1] - 115:18</p> <p>Carney [1] - 90:13</p> <p>CARPENT [1] - 21:11</p>
C				
cabinet [2] - 20:4,				

Carpent @uamail .
Albany .edu [1] -
21:10

Carpenter [17] - 2:12,
2:19, 3:15, 4:10,
18:5, 18:12, 22:9,
23:19, 24:20, 103:8,
103:20, 119:23,
140:17, 150:6,
155:12, 157:4, 163:7

CARPENTER [5] -
1:13, 2:1, 3:11,
161:2, 161:10

carpenter [2] - 21:21,
156:24

Carpenter 's [1] -
100:9

carried [1] - 87:24

Carrubba [1] - 152:1

carry [1] - 54:22

case [139] - 3:18, 4:16,
6:10, 6:24, 13:10,
14:5, 14:9, 14:14,
14:19, 15:2, 15:10,
15:16, 15:25, 16:14,
17:17, 17:23, 18:9,
20:10, 21:3, 24:22,
25:1, 27:7, 28:1,
29:7, 29:15, 29:21,
31:6, 31:20, 36:19,
37:1, 37:8, 37:12,
37:15, 37:24, 39:10,
40:22, 41:11, 45:18,
45:22, 46:1, 46:19,
47:5, 47:9, 47:16,
47:21, 47:23, 48:5,
48:6, 48:11, 48:14,
48:24, 48:25, 49:1,
49:6, 49:14, 50:8,
50:14, 50:21, 51:3,
51:10, 52:11, 52:12,
52:18, 52:19, 52:25,
53:2, 53:5, 53:8,
53:15, 62:20, 69:21,
77:20, 81:3, 81:17,
82:13, 82:19, 83:18,
84:25, 85:21, 88:24,
90:16, 94:7, 94:9,
95:20, 99:11,
103:10, 103:25,
104:22, 108:4,
108:5, 108:9,
108:10, 112:7,
115:25, 116:6,
119:5, 119:9,
119:11, 119:12,
120:21, 121:4,
121:21, 121:23,
121:25, 125:15,
125:23, 126:3,

126:4, 129:4,
129:13, 131:25,
132:1, 133:24,
135:10, 137:19,
144:3, 146:21,
146:23, 147:1,
147:2, 152:8, 154:7,
154:8, 154:19,
154:21, 154:22,
154:23, 155:1,
155:20, 155:24,
156:4, 156:10,
156:14, 156:22,
157:23, 158:14
Case [5] - 1:3, 2:18,
123:19, 124:1, 124:2
cases [22] - 3:23, 4:16,
13:16, 13:20, 13:22,
13:24, 13:25, 14:3,
15:8, 19:25, 20:17,
20:19, 47:18, 48:13,
51:5, 51:9, 51:13,
51:15, 103:9,
117:16, 152:7

catalase [1] - 91:19

catalog [2] - 147:25,
148:6

catalogued [1] - 64:19

categories [1] - 16:10

categorizing [1] -
24:25

category [1] - 115:6

caused [7] - 83:8,
84:7, 112:10,
121:10, 129:4,
142:11, 143:12

causes [6] - 95:14,
130:22, 130:25,
142:14, 145:15

causing [1] - 58:11

Caution [1] - 148:21

cell [33] - 33:19, 33:20,
46:4, 48:5, 63:21,
63:23, 63:25, 65:2,
65:4, 65:6, 65:9,
65:16, 74:6, 86:5,
92:19, 93:5, 93:9,
110:11, 110:14,
110:18, 110:20,
110:23, 128:8,
128:20, 130:11,
138:10, 138:11,
143:4, 144:23,
149:13, 149:14,
152:6

Cell [2] - 127:21,
148:21

cells [15] - 56:25,
57:22, 58:16, 58:17,
95:8, 95:19, 110:19,

130:8, 130:9, 141:1,
141:13, 142:2,
142:21, 143:17,
152:24

cellular [1] - 96:9

center [5] - 74:19,
75:15, 75:19, 75:25,
79:12

Center [1] - 135:23

centers [1] - 75:18

centimeter [13] -
56:15, 56:19, 57:13,
58:3, 59:7, 59:22,
60:1, 60:9, 60:14,
64:8, 67:12, 74:12

central [1] - 68:25

Central [7] - 3:19,
68:24, 70:2, 104:23,
124:4, 153:15, 163:6

CENTRAL [1] - 1:9

certain [6] - 50:10,
55:22, 66:7, 71:25,
123:14, 137:2

certainly [48] - 11:5,
15:6, 17:20, 19:5,
23:24, 29:20, 34:5,
41:5, 42:25, 55:7,
57:21, 58:1, 58:6,
60:3, 61:19, 64:12,
64:23, 66:21, 67:22,
72:15, 72:20, 73:14,
76:24, 95:11,
101:15, 101:23,
108:16, 115:3,
115:12, 116:1,
117:5, 117:8,
122:24, 124:2,
124:9, 124:22,
128:21, 131:2,
131:4, 131:14,
132:2, 132:19,
134:9, 138:24,
146:11, 152:21,
152:22, 158:5

certainty [3] - 101:8,
101:13, 102:6

CERTIFICATE [1] -
160:1

certify [3] - 160:3,
160:7, 160:12

chair [1] - 133:25

chaired [2] - 79:18,
79:21

chairperson [1] -
125:2

challenging [2] -
46:19, 124:3

Chamberlin [1] - 81:6

chance [10] - 44:7,
115:7, 115:9,

119:17, 125:11,
137:24, 138:2,
140:22, 158:1, 158:3

change [10] - 54:23,
61:5, 74:23, 77:8,
81:21, 133:19,
162:5, 162:6, 162:7

Change [1] - 162:14

changed [4] - 21:5,
21:8, 76:16, 158:20

Changed [1] - 162:14

changes [5] - 31:15,
61:2, 82:1, 161:4,
162:3

chapter [2] - 54:4,
73:6

Chapter [1] - 54:18

chapters [6] - 54:1,
54:8, 54:10, 54:15,
80:16, 80:19

characteristic [1] -
87:23

characterize [1] -
64:24

charge [3] - 15:7,
100:1, 136:8

charges [2] - 36:22,
124:6

charging [1] - 15:12

check [3] - 46:8, 47:3,
156:6

checked [3] - 19:22,
19:23, 20:2

chemical [1] - 9:11

chemicals [1] - 76:6

chief [2] - 11:11, 55:2

childhood [2] - 67:1,
136:11

children [22] - 36:14,
36:17, 37:9, 37:19,
37:20, 38:14, 67:7,
82:17, 89:7, 112:16,
112:20, 113:6,
113:7, 113:9,
113:11, 113:14,
113:20, 113:22,
115:5, 129:18,
130:2, 149:14

children's [1] - 76:2

Children's [1] - 12:2

choose [3] - 14:25,
58:13, 79:4

choosing [1] - 80:18

chose [1] - 80:19

Chris [6] - 3:16, 43:19,
45:9, 102:13,
103:12, 155:6

Christopher [2] - 1:22,
163:15

chronic [1] - 110:7

Cindy [10] - 24:12,
25:11, 53:23, 54:2,
54:24, 55:19, 56:11,
56:18, 57:9, 80:18

circle [1] - 18:3

circuits [1] - 89:4

circumstances [2] -
33:10, 42:9

citation [1] - 26:10

cite [4] - 35:15, 35:18,
35:19, 35:23

cited [2] - 112:13,
122:4

cites [2] - 151:21,
152:9

citizens [1] - 48:23

citizenship [1] - 11:17

city [1] - 134:21

Civil [1] - 156:20

CIVIL [1] - 1:3

claim [2] - 52:12,
126:8

claiming [1] - 112:9

claims [1] - 123:21

clarification [3] - 5:1,
88:12, 92:23

clarify [3] - 39:2,
122:6, 140:17

classifying [1] -
149:12

classrooms [1] - 63:4

clear [14] - 12:17,
25:10, 33:22, 36:1,
38:23, 39:4, 44:19,
80:6, 94:15, 96:17,
118:20, 119:6,
133:14, 136:18

clearly [16] - 34:23,
58:21, 61:6, 67:4,
69:7, 72:19, 87:6,
109:8, 115:16,
117:10, 122:11,
123:14, 128:17,
141:6, 141:10, 150:2

clients [1] - 20:16

clinical [2] - 13:1,
115:6

close [4] - 82:9, 144:7,
144:15, 158:2

closely [1] - 53:24

closest [1] - 52:18

CMP [3] - 98:10,
120:23, 156:12

co [8] - 11:11, 24:12,
55:2, 55:19, 81:13,
81:16, 82:4, 95:25

co-author [2] - 81:16,
95:25

co-authored [2] -
55:19, 81:13

co-authors [1] - 82:4 co-editor [3] - 11:11, 24:12, 55:2 cognitive [2] - 82:17, 84:1 collaborating [5] - 74:19, 75:15, 75:18, 75:25, 79:11 colleagues [1] - 74:14 collected [1] - 32:23 Columbia [2] - 12:19, 48:25 column [1] - 26:4 combination [2] - 96:9, 97:2 coming [3] - 65:17, 68:1, 145:12 comment [2] - 79:7, 114:23 commentaries [1] - 151:23 comments [5] - 43:25, 148:22, 150:5, 151:9, 152:11 Comments [1] - 120:10 Commission [40] - 12:7, 15:16, 15:25, 16:14, 18:9, 18:14, 18:15, 18:18, 18:23, 19:15, 19:19, 20:9, 20:17, 21:25, 23:15, 23:23, 24:22, 29:3, 29:8, 41:16, 41:17, 42:7, 46:12, 46:21, 47:22, 48:14, 48:18, 50:25, 68:23, 70:4, 81:15, 120:2, 120:21, 125:15, 131:24, 136:2, 148:2, 149:1, 150:4, 153:15 commission [7] - 12:12, 42:1, 148:12, 148:17, 148:18, 160:24, 161:24 commission's [1] - 148:16 commissions [1] - 137:14 committee [8] - 12:13, 19:5, 79:9, 79:18, 79:21, 147:14, 147:15, 147:18 common [6] - 10:25, 93:12, 93:25, 94:13, 130:17, 131:10 communication [2] - 17:19, 20:23 Communications [2] -	12:6, 150:4 communications [6] - 16:12, 17:3, 17:7, 17:8, 17:11, 156:16 community [8] - 47:8, 50:18, 50:19, 52:1, 78:4, 78:9, 78:11, 154:12 companies [1] - 8:8 company [2] - 55:7, 74:6 Company [5] - 3:19, 68:24, 70:3, 104:24, 163:6 compare [1] - 26:6 compared [2] - 36:16, 37:14 compares [2] - 64:8, 66:6 comparing [1] - 25:7 compelling [1] - 63:14 compensated [1] - 14:19 compensation [2] - 15:1, 15:11 complaint [1] - 83:11 complaints [2] - 32:22, 42:8 complements [1] - 110:24 complete [1] - 109:20 COMPLETED [1] - 161:16 completely [3] - 108:1, 108:12, 140:5 complimentary [1] - 148:23 component [2] - 67:25, 94:21 components [2] - 6:1, 14:4 composed [1] - 91:5 comprehensive [1] - 128:25 computer [3] - 47:2, 63:5, 160:9 computer-aided [1] - 160:9 concern [5] - 82:16, 82:18, 98:5, 129:13, 140:24 concerned [3] - 42:18, 97:9, 97:13 concerning [1] - 47:13 concerns [2] - 73:22, 133:24 concerted [1] - 10:24 conclude [1] - 96:14 concluded [2] - 53:7, 159:2	conclusion [8] - 9:24, 39:8, 42:4, 115:2, 117:13, 117:23, 129:17, 129:20 conclusions [1] - 47:13 condemned [1] - 72:12 condense [1] - 37:5 conditions [4] - 82:12, 83:7, 83:8, 83:16 condom [1] - 65:12 conduct [1] - 108:13 conducted [5] - 13:11, 102:23, 104:14, 106:2, 135:12 confess [1] - 82:8 confidence [4] - 101:5, 101:15, 101:24, 158:19 confirm [2] - 26:17, 118:5 confirmation [3] - 76:19, 80:8, 116:4 confirmed [2] - 136:10, 141:21 confirms [1] - 42:14 conflict [3] - 70:17, 75:1, 75:3 conflicts [4] - 69:13, 70:19, 70:21, 74:24 confounding [1] - 113:25 confused [1] - 60:6 confusing [1] - 51:18 connect [1] - 63:2 Connecticut [4] - 49:6, 49:9, 51:3, 77:19 connection [8] - 13:10, 15:24, 17:14, 27:6, 27:20, 29:3, 69:2, 126:3 connections [1] - 63:5 Connolly [1] - 3:6 Conrad [11] - 120:18, 120:23, 121:20, 122:2, 122:12, 122:15, 122:17, 123:1, 123:6, 154:4, 155:13 consider [7] - 6:3, 6:8, 33:13, 69:22, 70:13, 115:18, 141:14 considerably [2] - 70:18, 110:12 considered [3] - 8:15, 121:19, 153:3 considering [1] - 151:18	consistency [5] - 143:9, 143:22, 145:14, 145:18, 145:23 consistent [10] - 28:24, 31:17, 33:17, 34:19, 114:5, 114:15, 117:14, 117:21, 119:5, 142:7 consists [1] - 143:11 constantly [1] - 97:24 constitute [2] - 33:12, 148:18 constructed [1] - 89:3 construction [1] - 47:9 consult [1] - 7:16 consultation [1] - 54:7 consulting [1] - 55:7 contained [4] - 20:10, 148:6, 156:22, 162:4 containing [1] - 148:15 contains [2] - 24:24, 43:21 contemplated [1] - 54:10 contention [1] - 39:11 contents [1] - 153:6 continuation [1] - 25:9 continued [1] - 37:2 continuous [1] - 97:21 continuously [1] - 97:19 contradict [1] - 4:19 contradicted [1] - 80:14 contradiction [1] - 4:20 contribute [1] - 54:1 control [2] - 132:22, 152:8 conversations [1] - 40:10 convey [2] - 89:2, 131:24 conveyed [1] - 40:12 convinced [3] - 55:9, 77:21, 135:17 copied [1] - 44:13 copies [3] - 22:21, 24:16, 43:24 copy [12] - 55:25, 103:13, 109:25, 110:1, 125:7, 148:14, 148:22, 150:19, 152:21, 154:20, 158:6, 163:10	core [2] - 6:1, 9:4 corner [1] - 23:18 Corporation [1] - 46:15 correct [91] - 5:21, 5:22, 9:1, 12:21, 13:2, 14:22, 24:3, 27:4, 27:13, 29:5, 29:11, 30:22, 32:9, 32:14, 32:15, 32:20, 34:6, 35:12, 37:4, 37:6, 37:10, 37:11, 38:25, 39:1, 45:19, 46:16, 46:22, 46:24, 48:1, 48:2, 50:3, 50:4, 51:1, 51:7, 51:23, 52:9, 53:3, 53:20, 53:21, 59:12, 63:18, 63:23, 72:3, 72:4, 77:24, 82:7, 82:13, 82:14, 82:19, 82:20, 83:1, 83:2, 83:8, 92:7, 96:24, 97:5, 97:15, 102:4, 107:4, 108:6, 111:17, 112:6, 116:19, 116:20, 118:1, 118:2, 119:21, 119:22, 120:22, 120:25, 126:5, 126:9, 129:5, 129:6, 129:19, 129:22, 129:23, 131:20, 132:12, 132:13, 139:24, 140:11, 143:15, 145:3, 146:4, 146:7, 147:24 corrected [1] - 17:12 corrections [1] - 161:6 correctly [6] - 46:4, 46:9, 97:5, 109:12, 130:19, 142:21 correspondence [4] - 11:1, 20:6, 42:23, 43:1 corresponds [1] - 24:23 corroborating [1] - 75:19 costs [1] - 62:25 Coumb [2] - 155:11 Council [2] - 74:8, 78:22 counsel [2] - 16:13, 17:13 countries [2] - 56:17, 73:21 country [1] - 117:19 counts [1] - 94:15
--	---	---	--	---

<p>couple [4] - 23:1, 87:9, 109:14, 157:7</p> <p>course [12] - 9:2, 9:3, 9:10, 39:23, 71:8, 90:8, 100:24, 124:12, 130:15, 132:3, 135:15, 144:5</p> <p>courses [3] - 9:5, 10:8, 158:9</p> <p>Court [3] - 153:13, 160:22</p> <p>COURT [4] - 1:1, 145:16, 145:21, 149:5</p> <p>court [5] - 4:12, 53:5, 53:6, 100:12, 137:7</p> <p>cover [1] - 162:11</p> <p>covered [1] - 138:21</p> <p>create [2] - 11:1, 59:14</p> <p>created [3] - 23:12, 68:20, 68:21</p> <p>creates [4] - 60:8, 66:18, 66:21, 91:10</p> <p>credibility [4] - 69:6, 69:11, 74:22, 76:10</p> <p>Creek [2] - 50:23, 51:1</p> <p>criteria [1] - 36:1</p> <p>critical [5] - 9:21, 72:21, 94:21, 138:12, 151:22</p> <p>criticism [1] - 79:2</p> <p>criticisms [2] - 72:7, 73:1</p> <p>criticized [1] - 125:8</p> <p>criticizes [3] - 151:21, 151:25, 152:6</p> <p>criticizing [1] - 150:7</p> <p>critique [3] - 150:10, 150:17, 152:11</p> <p>cross [2] - 151:8, 158:24</p> <p>cross-examination [1] - 158:24</p> <p>cross-examine [1] - 151:8</p> <p>CT [1] - 2:18</p> <p>ctaintor @nhdlaw . com [1] - 163:16</p> <p>cubic [1] - 64:14</p> <p>cumulative [2] - 103:15, 105:11</p> <p>curve [1] - 118:20</p> <p>customers ' [1] - 120:23</p> <p>CV [3] - 2:10, 18:6, 18:10</p> <p>Cybart [1] - 50:7</p> <p>cycle [1] - 98:9</p>	<p style="text-align: center;">D</p> <p>D.C [1] - 7:23</p> <p>DAFNA [1] - 11:22</p> <p>Dafna [2] - 11:5, 11:15</p> <p>damage [6] - 61:17, 61:18, 128:18, 142:6</p> <p>damaged [1] - 84:8</p> <p>danger [3] - 29:9, 42:4, 113:1</p> <p>dangerous [3] - 65:19, 89:18, 137:3</p> <p>Darius [1] - 155:10</p> <p>data [5] - 71:2, 96:12, 117:20, 119:24, 119:25</p> <p>Date [1] - 161:12</p> <p>date [4] - 43:11, 122:8, 148:12, 161:23</p> <p>dated [2] - 119:21, 155:24</p> <p>dating [1] - 76:14</p> <p>David [9] - 22:17, 24:20, 103:8, 105:2, 150:6, 150:17, 155:12, 156:9, 163:7</p> <p>DAVID [5] - 1:13, 2:1, 3:11, 161:2, 161:10</p> <p>days [2] - 144:23, 163:11</p> <p>DC [1] - 67:23</p> <p>De [1] - 155:11</p> <p>deal [1] - 57:24</p> <p>dealing [5] - 36:10, 36:11, 68:17, 95:1, 141:20</p> <p>death [4] - 114:7, 114:17, 117:2, 117:9</p> <p>debunk [3] - 151:15, 152:15, 152:16</p> <p>debunked [1] - 152:22</p> <p>decide [3] - 44:10, 69:19, 156:25</p> <p>decided [1] - 54:13</p> <p>decision [3] - 52:22, 73:3, 147:2</p> <p>decisions [1] - 71:5</p> <p>deck [2] - 134:5, 134:6</p> <p>declare [1] - 8:8</p> <p>decline [3] - 86:7, 86:14, 86:15</p> <p>declined [2] - 33:9, 42:2</p> <p>declines [1] - 86:12</p> <p>decrease [4] - 99:22, 100:13, 100:19</p> <p>decreased [4] - 101:10, 101:14, 101:17, 101:25</p> <p>deed [1] - 161:21</p>	<p>Deepwater [1] - 45:18</p> <p>defects [1] - 61:20</p> <p>Defendant [2] - 1:10, 1:22</p> <p>defendants [2] - 69:20, 70:25</p> <p>defending [2] - 92:14, 151:24</p> <p>defense [2] - 126:17, 136:5</p> <p>Defense [1] - 12:2</p> <p>defer [2] - 6:9, 6:19</p> <p>deferred [1] - 52:22</p> <p>deficient [1] - 92:13</p> <p>define [1] - 62:12</p> <p>defined [1] - 58:21</p> <p>definitely [1] - 7:18</p> <p>degree [8] - 6:12, 12:25, 62:17, 101:5, 101:8, 101:12, 102:5, 132:23</p> <p>degrees [1] - 70:21</p> <p>delete [4] - 20:21, 21:2</p> <p>deleted [2] - 17:21, 21:1</p> <p>demonstrate [5] - 30:12, 37:19, 38:14, 95:12, 142:18</p> <p>demonstrated [10] - 31:14, 60:11, 77:13, 110:17, 111:11, 113:11, 128:11, 128:18, 141:4, 141:6</p> <p>demonstrates [2] - 111:12, 116:15</p> <p>demonstrating [2] - 72:17, 111:23</p> <p>demonstration [1] - 128:7</p> <p>demonstrations [1] - 94:16</p> <p>Denmark [2] - 73:15, 73:20</p> <p>density [1] - 24:25</p> <p>deny [1] - 77:4</p> <p>Department [1] - 135:25</p> <p>DEPONENT [1] - 2:1</p> <p>deponent [3] - 3:8, 160:4, 160:11</p> <p>Deponent [1] - 162:23</p> <p>deposed [1] - 3:21</p> <p>deposes [1] - 3:12</p> <p>DEPOSITION [1] - 1:13</p> <p>deposition [30] - 3:1, 3:5, 3:18, 3:23, 4:6, 4:7, 16:11, 16:20, 21:17, 21:18, 21:22, 22:7, 22:14, 27:21, 41:1, 41:12, 41:13, 42:21, 45:3, 80:23, 80:24, 84:17, 140:15, 140:16, 156:23, 158:2, 159:2, 160:7, 162:4, 163:10</p> <p>Deposition [11] - 2:9, 2:18, 16:17, 16:20, 18:5, 18:12, 22:10, 45:8, 45:15, 81:12, 163:7</p> <p>depositions [3] - 17:22, 49:7, 147:9</p> <p>derived [1] - 136:25</p> <p>described [6] - 17:3, 89:10, 90:17, 92:9, 92:25, 108:8</p> <p>describes [4] - 44:3, 93:16, 154:24, 156:10</p> <p>Description [1] - 2:8</p> <p>description [1] - 155:8</p> <p>design [1] - 117:8</p> <p>designate [1] - 139:2</p> <p>designated [2] - 6:24, 81:3</p> <p>designation [2] - 75:21, 80:4</p> <p>designed [4] - 110:10, 110:13, 117:18, 121:16</p> <p>desirable [1] - 72:3</p> <p>desk [1] - 22:22</p> <p>despite [1] - 132:9</p> <p>detail [2] - 9:22, 82:9</p> <p>details [4] - 17:25, 46:2, 46:7, 50:22</p> <p>detect [2] - 96:5, 114:20</p> <p>determine [2] - 17:7, 20:23</p> <p>determined [1] - 56:24</p> <p>detract [1] - 115:9</p> <p>detracts [2] - 115:2, 115:11</p> <p>DeTroy [1] - 163:16</p> <p>develop [4] - 38:2, 55:13, 90:6, 93:8</p> <p>developed [9] - 33:6, 40:3, 56:17, 62:24, 75:4, 87:19, 88:25, 91:17, 121:18</p> <p>developing [5] - 62:4, 62:5, 62:6, 68:16</p> <p>development [6] - 27:19, 28:11, 32:25, 58:11, 93:7, 142:18</p> <p>develops [1] - 38:10</p> <p>deviate [1] - 80:13</p>	<p>deviating [1] - 76:20</p> <p>diagnosis [2] - 40:5, 127:4</p> <p>Diane [1] - 43:25</p> <p>die [3] - 38:6, 38:11</p> <p>differed [1] - 34:15</p> <p>difference [2] - 92:15, 92:20</p> <p>different [39] - 5:24, 10:21, 10:22, 14:13, 25:10, 34:7, 34:8, 44:3, 53:4, 60:19, 65:23, 66:10, 68:6, 75:18, 77:16, 78:19, 91:18, 93:12, 105:25, 112:8, 116:22, 117:4, 117:5, 117:19, 124:5, 129:21, 130:17, 136:12, 141:2, 141:13, 142:16, 142:17, 143:3, 143:4, 143:8, 144:25, 151:17, 153:1</p> <p>differs [2] - 158:14, 158:16</p> <p>difficult [5] - 25:20, 57:6, 57:14, 77:8, 80:13</p> <p>directed [1] - 13:24</p> <p>direction [2] - 87:3, 87:6</p> <p>directions [2] - 87:4, 87:5</p> <p>directly [11] - 7:3, 43:17, 83:5, 84:7, 111:20, 112:24, 129:9, 129:11, 142:3, 146:9, 155:20</p> <p>director [1] - 135:23</p> <p>dirty [8] - 87:17, 87:21, 88:2, 88:24, 90:16, 105:25, 106:4, 138:19</p> <p>Disabilities [3] - 36:22, 124:10, 126:12</p> <p>disability [4] - 52:14, 100:2, 100:3, 126:8</p> <p>disagreement [5] - 56:11, 57:1, 57:9, 57:10, 57:11</p> <p>disagrees [1] - 78:7</p> <p>discipline [1] - 9:4</p> <p>discoverable [1] - 156:23</p> <p>discovered [1] - 135:4</p> <p>discrimination [1] - 123:22</p>
--	--	--	---

discuss [1] - 140:25
discussed [4] - 54:1, 108:23, 110:9, 150:9
Discussion [1] - 113:16
discussion [1] - 82:2
discussions [2] - 10:13, 151:12
disease [21] - 13:14, 13:18, 13:23, 14:1, 14:2, 38:11, 39:19, 60:2, 61:7, 61:11, 61:23, 71:10, 72:2, 92:1, 93:1, 99:13, 129:10, 129:12, 129:21, 130:14, 142:1
disease-producing [1] - 93:1
diseases [5] - 62:5, 83:15, 84:4, 89:7, 129:23
dish [3] - 58:16, 58:19, 58:20
disinterested [1] - 160:12
dismutase [1] - 91:18
disproportionate [1] - 52:16
dispute [1] - 50:15
disqualified [1] - 49:16
disqualify [1] - 49:18
disrupting [1] - 76:6
disruption [1] - 62:18
dissertation [1] - 36:24
distance [6] - 86:7, 86:12, 86:14, 86:15, 133:13, 144:12
distant [1] - 134:11
distinct [1] - 89:9
distinctly [1] - 78:3
distinguish [1] - 109:11
District [1] - 12:18
DISTRICT [2] - 1:1, 1:1
disturbances [1] - 153:11
DNA [4] - 61:18, 84:8, 128:18
docket [1] - 16:14
Doctor [3] - 118:13, 140:21, 158:13
doctor [3] - 41:15, 55:3, 88:15
doctor-level [1] - 55:3
document [23] - 11:10, 23:4, 23:6, 24:17, 27:5, 40:25,

41:3, 41:24, 45:14, 53:18, 54:11, 55:13, 125:25, 131:4, 131:13, 148:9, 148:14, 148:20, 150:2, 153:11, 153:12, 153:17, 156:2
documentation [2] - 33:13, 40:2
documented [4] - 30:15, 92:2, 108:2, 115:20
documents [18] - 11:1, 11:5, 11:13, 16:10, 16:11, 20:13, 22:1, 22:2, 41:8, 69:17, 73:16, 83:13, 109:22, 109:23, 140:13, 148:6, 148:24, 153:9
dollars [1] - 15:11
Dominique [1] - 147:23
done [21] - 14:14, 28:4, 31:1, 31:2, 45:11, 60:20, 69:9, 69:12, 80:20, 80:21, 95:25, 108:25, 110:25, 116:12, 116:16, 116:17, 128:9, 135:15, 135:18, 135:19
dose [3] - 118:20, 119:6, 152:4
dot [2] - 21:12
double [1] - 153:16
double-spaced [1] - 153:16
doubt [4] - 41:4, 115:25, 149:2, 149:19
down [6] - 12:22, 26:3, 56:19, 90:24, 91:10, 137:22
DR [1] - 119:23
Dr [18] - 3:15, 4:10, 6:25, 7:2, 7:9, 7:15, 8:2, 12:20, 21:21, 81:4, 81:14, 100:9, 103:20, 140:17, 151:8, 152:16, 156:24, 157:4
draft [3] - 148:8, 148:10, 148:17
dramatically [1] - 108:17
draw [2] - 129:16, 146:8
drawing [2] - 39:8,

71:3
drawn [1] - 47:13
Dropbox [3] - 25:3, 93:21, 140:13
drove [1] - 55:5
due [3] - 40:16, 111:22, 126:24
duly [1] - 3:11
duration [15] - 28:18, 31:23, 36:15, 37:21, 38:8, 38:12, 97:3, 99:13, 99:23, 138:12, 138:18, 138:22, 138:24, 145:25, 146:6
during [4] - 16:13, 42:6, 43:15, 83:14
duty [1] - 98:9

E

e-d-u [1] - 21:12
E-P-R-I [1] - 149:4
E-waste [2] - 76:4, 76:5
ear [3] - 64:1, 65:2, 65:7
early [1] - 88:25
earpiece [1] - 65:4
ears [2] - 83:4, 83:7
earth [6] - 62:3, 67:21, 67:23, 68:16, 151:17, 152:17
easier [2] - 7:12, 26:7
easy [1] - 110:1
eclectic [1] - 87:23
ecologic [1] - 152:7
economic [1] - 58:11
Ed [12] - 3:5, 3:18, 42:8, 44:2, 83:21, 83:24, 84:14, 126:6, 126:20, 140:9, 153:14, 163:6
ED [1] - 1:6
Ed's [2] - 126:18, 127:3
editing [1] - 53:19
edition [1] - 54:22
editor [3] - 11:11, 24:12, 55:2
educated [1] - 31:11
effect [12] - 28:23, 37:9, 37:14, 58:22, 61:4, 61:10, 77:12, 85:15, 96:14, 98:3, 142:22
effectively [1] - 101:21
effects [34] - 23:10, 45:24, 47:14, 52:25, 55:15, 57:2, 57:22,

58:16, 59:6, 60:3, 60:14, 61:10, 61:24, 69:25, 74:11, 79:5, 83:23, 84:1, 84:6, 85:8, 94:14, 94:22, 97:14, 111:24, 121:7, 130:1, 136:4, 136:14, 136:18, 141:20, 141:23, 142:10, 154:2, 154:17
Effects [5] - 2:11, 22:11, 22:23, 122:13, 153:24
effort [3] - 11:3, 51:21, 55:5
efforts [1] - 118:4
EHS [1] - 138:13
eight [3] - 70:12, 111:7, 114:12
eighth [5] - 25:14, 25:15, 25:18, 25:24, 26:2
either [14] - 7:20, 9:25, 19:3, 20:24, 38:1, 40:11, 42:22, 66:10, 68:20, 81:9, 107:17, 111:18, 126:17, 136:25
elaborate [1] - 139:15
Electric [2] - 46:14, 153:18
electric [1] - 153:10
electrical [3] - 105:22, 120:13, 152:24
electricity [14] - 34:21, 87:17, 87:21, 87:24, 88:2, 88:24, 90:16, 105:25, 106:4, 134:20, 134:25, 135:7, 138:19, 152:25
electro [1] - 31:7
electrohypersensitiv e [2] - 83:6, 92:10
electrohypersensitiv ity [17] - 58:1, 62:7, 77:22, 81:25, 82:22, 83:1, 83:25, 84:19, 84:23, 85:3, 85:4, 90:6, 94:20, 96:2, 96:7, 96:8, 145:7
electromagnetic [30] - 9:11, 30:10, 34:8, 36:12, 36:15, 36:17, 36:25, 38:16, 39:6, 50:6, 55:15, 59:4, 61:8, 68:19, 69:22, 76:12, 77:11, 79:5, 82:1, 82:24, 84:3,

84:7, 99:21, 106:1, 108:4, 130:6, 135:21, 136:19, 137:4, 149:12
Electromagnetic [4] - 109:17, 118:12, 118:17
electromagnetically [4] - 33:25, 35:7, 39:14, 63:21
electromechanical [3] - 29:17, 30:1, 32:13
electronic [5] - 10:1, 76:4, 104:8, 109:25, 158:6
electrons [3] - 91:1, 91:4, 91:11
electrosensitive [13] - 31:25, 32:1, 32:2, 32:6, 34:15, 34:24, 42:16, 46:3, 90:14, 91:24, 93:2, 93:10, 108:1
electrosensitivity [1] - 93:3
elevated [14] - 27:18, 28:24, 36:14, 38:16, 67:2, 99:20, 112:18, 113:10, 113:14, 118:24, 130:11, 132:19, 132:21, 133:14
elevation [5] - 110:21, 128:11, 132:23, 134:3, 134:4
elevations [3] - 110:17, 128:16, 136:15
eligible [1] - 113:20
Elliott [1] - 152:9
email [27] - 20:21, 20:23, 21:4, 21:5, 21:9, 42:22, 43:7, 43:9, 43:12, 43:15, 44:2, 44:14, 54:7, 119:14, 119:20, 124:24, 125:11, 125:13, 125:19, 149:25, 150:1, 150:11, 151:2, 151:6, 153:5, 154:7, 154:15
Email [1] - 2:19
emailed [1] - 83:14
emails [4] - 20:12, 20:15, 21:7, 43:2
emerging [1] - 82:16
EMF [5] - 8:9, 19:25, 53:6, 113:12, 137:8
EMFs [3] - 83:17,

<p>87:20, 136:24</p> <p>emissions [21] - 14:6, 14:17, 27:8, 27:12, 35:9, 48:22, 89:24, 96:21, 102:19, 102:21, 102:23, 104:14, 105:17, 105:24, 106:11, 106:13, 106:14, 106:22, 152:17, 152:23</p> <p>emitted [7] - 35:3, 35:10, 87:2, 87:3, 87:5, 142:13</p> <p>employed [1] - 75:2</p> <p>Enclosed [1] - 163:10</p> <p>enclosed [1] - 163:11</p> <p>encyclopedia [1] - 11:12</p> <p>end [10] - 36:2, 45:4, 45:16, 85:18, 91:2, 103:4, 104:18, 116:22, 116:25, 136:9</p> <p>endocrine [1] - 76:5</p> <p>ends [1] - 103:5</p> <p>energy [6] - 63:16, 67:4, 87:2, 91:16, 98:14, 98:16</p> <p>engage [2] - 16:8, 17:6</p> <p>engaged [3] - 15:14, 17:17, 20:16</p> <p>engagement [1] - 19:17</p> <p>engages [1] - 66:11</p> <p>engineer [4] - 64:16, 64:21, 88:15, 105:22</p> <p>engineers [3] - 78:25, 105:23, 106:9</p> <p>enormous [1] - 58:11</p> <p>enrolled [1] - 113:21</p> <p>entitled [5] - 22:10, 52:13, 55:17, 118:16, 123:25</p> <p>entity [1] - 91:3</p> <p>Environment [1] - 74:18</p> <p>environment [3] - 67:24, 95:17, 112:17</p> <p>environmental [11] - 9:6, 9:7, 9:10, 13:17, 54:6, 58:4, 63:11, 75:19, 75:25, 82:23</p> <p>Environmental [3] - 2:13, 79:20, 84:18</p> <p>enzymes [1] - 91:18</p> <p>Enzymes [1] - 91:19</p> <p>EPA [1] - 60:23</p> <p>Epic [1] - 148:21</p>	<p>epidemiological [3] - 6:5, 9:16, 9:18</p> <p>epidemiologist [3] - 6:4, 6:8, 6:10</p> <p>epidemiology [11] - 5:24, 6:1, 6:3, 6:13, 6:14, 6:15, 6:18, 8:24, 9:2, 9:3, 9:4</p> <p>EPRI [4] - 148:22, 149:3, 149:4, 149:7</p> <p>era [1] - 88:1</p> <p>Eric [1] - 81:8</p> <p>errata [7] - 161:7, 162:2, 162:8, 162:10, 163:12, 163:12, 163:13</p> <p>ERRATA [1] - 162:1</p> <p>error [1] - 122:7</p> <p>errors [2] - 151:11, 163:11</p> <p>especially [3] - 6:20, 84:4, 115:22</p> <p>espoused [1] - 12:20</p> <p>Esq [3] - 1:21, 1:22, 163:15</p> <p>essentially [1] - 14:21</p> <p>established [3] - 32:3, 141:9, 141:14</p> <p>Estates [2] - 50:23, 51:1</p> <p>et [3] - 2:15, 50:7, 153:14</p> <p>etc [3] - 120:10, 122:13, 162:7</p> <p>Europe [4] - 33:5, 72:11, 74:14, 133:6</p> <p>event [6] - 114:7, 114:17, 117:1, 117:6, 121:9, 160:13</p> <p>event-free [3] - 114:7, 114:17, 117:1</p> <p>evidence [76] - 9:9, 9:23, 28:4, 29:19, 30:9, 30:20, 31:23, 32:11, 32:17, 33:16, 33:23, 36:4, 38:21, 53:7, 55:14, 56:23, 57:16, 57:17, 57:21, 57:23, 58:15, 59:1, 59:25, 60:2, 60:3, 60:15, 61:8, 65:6, 65:8, 65:10, 67:1, 67:7, 71:6, 72:5, 72:21, 72:23, 72:25, 74:16, 75:7, 75:12, 77:9, 77:15, 77:16, 78:12, 80:14, 81:24, 83:22, 84:22, 85:7, 85:17, 88:9, 88:10, 89:17, 93:23, 94:10,</p>	<p>101:1, 102:20, 111:9, 115:13, 129:20, 130:21, 130:22, 131:2, 131:6, 131:8, 132:4, 132:6, 141:11, 142:4, 143:7, 146:14, 146:16, 152:12, 158:18</p> <p>Evidence [1] - 55:17</p> <p>evolved [2] - 68:13, 153:3</p> <p>ex [1] - 162:7</p> <p>exacerbate [1] - 131:19</p> <p>exacerbated [2] - 98:22, 98:23</p> <p>exactly [13] - 59:15, 60:10, 63:18, 76:21, 111:6, 117:8, 117:15, 117:20, 125:16, 130:15, 145:9, 146:12, 154:23</p> <p>EXAM-017-003 [1] - 125:1</p> <p>examination [1] - 158:24</p> <p>EXAMINATION [2] - 2:2, 3:13</p> <p>examine [1] - 151:8</p> <p>examiner's [1] - 148:15</p> <p>example [5] - 22:9, 24:6, 25:12, 75:24, 144:18</p> <p>examples [1] - 97:20</p> <p>exceeds [1] - 139:8</p> <p>except [5] - 15:12, 22:4, 51:15, 84:7, 90:11</p> <p>excessive [2] - 99:15, 100:3</p> <p>exchanged [1] - 20:16</p> <p>excluded [3] - 137:7, 137:15, 146:22</p> <p>exclusive [1] - 9:11</p> <p>exclusively [1] - 8:21</p> <p>excreting [1] - 145:8</p> <p>excuse [2] - 18:14, 35:16</p> <p>executed [1] - 163:13</p> <p>executive [1] - 155:18</p> <p>exhibit [8] - 26:13, 26:14, 26:15, 45:3, 105:4, 119:18, 122:14, 125:20</p> <p>Exhibit [43] - 16:17, 16:20, 17:2, 18:6, 18:12, 22:10, 23:19,</p>	<p>24:17, 24:18, 24:19, 24:20, 24:23, 25:6, 25:7, 25:13, 25:14, 25:18, 25:25, 26:6, 26:18, 26:21, 27:11, 36:3, 45:9, 45:15, 81:13, 84:17, 86:3, 94:3, 102:11, 104:19, 105:1, 105:8, 107:21, 110:3, 112:12, 116:21, 122:7, 122:13, 127:16, 137:17, 153:24</p> <p>EXHIBIT [1] - 2:6</p> <p>exhibiting [1] - 72:8</p> <p>exhibits [8] - 21:22, 22:5, 22:7, 22:16, 30:16, 44:4, 104:20, 105:1</p> <p>Exhibits [2] - 21:23, 107:20</p> <p>exist [1] - 17:8</p> <p>existed [2] - 17:7, 77:22</p> <p>existing [1] - 56:16</p> <p>exists [2] - 20:7, 53:6</p> <p>EXM-017-001 [1] - 120:12</p> <p>EXN [1] - 44:1</p> <p>expanded [1] - 77:17</p> <p>expansion [2] - 31:6, 55:20</p> <p>expect [2] - 155:16, 157:19</p> <p>expenses [2] - 14:21, 15:12</p> <p>experience [2] - 49:15, 153:10</p> <p>experimental [2] - 95:17, 141:1</p> <p>Expert [1] - 103:8</p> <p>expert [10] - 3:24, 6:23, 15:7, 16:1, 19:18, 81:2, 154:25, 155:9, 155:23, 156:13</p> <p>expertise [2] - 86:24, 87:1</p> <p>experts [1] - 156:12</p> <p>expires [2] - 160:24, 161:24</p> <p>explain [6] - 28:15, 60:18, 90:20, 102:25, 105:21, 117:25</p> <p>explaining [1] - 106:16</p> <p>explanation [2] - 63:8, 88:9</p>	<p>explicitly [1] - 72:12</p> <p>Exponent [7] - 68:21, 69:7, 69:15, 69:18, 69:20, 150:20, 153:6</p> <p>Exponent's [2] - 150:23, 151:6</p> <p>expose [1] - 110:14</p> <p>exposed [16] - 36:14, 36:17, 37:23, 38:16, 66:13, 68:1, 68:11, 92:19, 109:11, 113:3, 118:21, 118:22, 128:7, 129:15, 140:2</p> <p>exposing [3] - 63:7, 144:22, 144:25</p> <p>exposure [126] - 8:14, 13:22, 14:6, 14:17, 27:18, 28:18, 28:24, 30:14, 31:3, 31:4, 31:12, 36:6, 37:2, 37:9, 37:13, 38:20, 45:24, 52:15, 53:1, 53:9, 55:24, 56:8, 57:17, 57:18, 57:20, 57:22, 58:10, 59:13, 59:18, 59:23, 60:7, 60:21, 61:9, 61:25, 62:3, 62:4, 62:8, 62:12, 62:14, 62:16, 62:17, 63:6, 63:16, 64:6, 64:7, 64:15, 65:15, 66:1, 66:3, 66:5, 66:6, 66:9, 66:24, 67:2, 67:11, 67:13, 68:13, 68:20, 68:23, 69:4, 69:25, 70:2, 71:13, 78:2, 83:16, 86:4, 86:11, 93:19, 94:2, 94:25, 95:4, 95:5, 95:7, 95:17, 95:20, 97:1, 98:15, 99:15, 99:20, 100:19, 101:19, 101:22, 103:15, 106:4, 106:24, 107:1, 110:8, 110:10, 110:23, 111:1, 111:22, 112:3, 112:9, 112:18, 114:6, 114:16, 115:6, 118:24, 120:13, 129:12, 130:6, 130:9, 130:12, 130:14, 130:21, 131:15, 132:7, 132:11, 132:20, 133:7, 133:12, 134:7, 134:15,</p>
--	---	--	--	--

<p>135:11, 136:10, 137:3, 138:12, 139:7, 139:9, 140:1, 140:5, 142:13, 143:12, 144:3, 152:4 Exposure [5] - 22:12, 22:24, 118:11, 118:16, 118:18 exposure's [1] - 100:4 exposures [10] - 9:12, 13:17, 58:5, 60:4, 61:25, 85:2, 113:12, 113:14, 143:25, 144:2 expressed [1] - 158:19 expression [2] - 61:3, 61:6 extend [1] - 35:2 extensive [2] - 28:8, 128:9 extent [4] - 98:21, 99:5, 156:21, 158:13 extra [4] - 15:5, 36:22, 100:1, 100:6 extraordinarily [1] - 31:22 extrapolating [1] - 92:3 eyes [1] - 115:20</p>	<p>26:25, 52:4, 52:9 familiarity [2] - 6:23, 81:2 families [1] - 66:4 far [8] - 12:17, 26:4, 27:11, 51:4, 86:21, 106:25, 144:6 fashion [3] - 52:24, 71:3, 158:21 fatal [2] - 38:6, 99:17 fatigue [2] - 40:15, 126:19 faulty [1] - 151:11 favor [1] - 72:1 Fay [8] - 2:18, 47:23, 48:11, 52:18, 108:10, 124:12, 124:18, 137:19 FCC [3] - 58:3, 64:13, 85:12 fear [1] - 52:15 February [1] - 160:24 Federal [2] - 12:6, 150:4 federal [1] - 8:12 fee [1] - 126:10 fees [1] - 15:7 feet [5] - 86:16, 98:14, 98:17, 101:21, 133:15 fell [1] - 133:13 fellow [3] - 34:10, 81:5, 81:8 felt [3] - 57:13, 74:21, 121:6 fertility [2] - 62:6, 94:19 few [6] - 3:16, 5:12, 5:14, 34:11, 98:5, 127:17 fewer [1] - 113:20 Fi [15] - 33:19, 48:1, 50:4, 50:5, 53:9, 63:22, 65:16, 132:12, 132:16, 132:20, 132:23, 132:24, 132:25, 137:19, 138:10 field [7] - 7:7, 7:17, 67:22, 67:23, 70:1, 108:4, 142:8 Field [1] - 109:17 fields [66] - 8:22, 9:11, 11:19, 30:8, 30:11, 31:7, 31:8, 31:21, 32:6, 33:11, 34:14, 34:21, 36:12, 36:15, 36:18, 36:25, 38:16, 38:20, 50:6, 50:7, 53:1, 55:15, 57:3,</p>	<p>61:9, 61:13, 66:21, 66:24, 67:3, 67:4, 67:6, 69:22, 69:25, 76:12, 77:11, 79:6, 82:1, 82:24, 84:3, 84:7, 87:23, 89:1, 89:8, 99:21, 104:1, 106:2, 109:13, 110:8, 111:8, 111:21, 111:24, 113:11, 114:7, 128:5, 129:2, 129:12, 130:6, 132:8, 135:22, 136:4, 136:11, 136:19, 137:4, 149:12, 150:5, 153:1 Fields [1] - 118:18 fifth [1] - 122:8 fight [1] - 156:18 figure [3] - 44:23, 102:9, 156:17 file [21] - 20:4, 20:10, 20:12, 20:14, 35:22, 41:10, 42:23, 44:23, 46:7, 47:2, 48:10, 66:15, 119:9, 120:25, 123:3, 147:1, 148:3, 153:7, 154:14, 155:20 filed [2] - 150:20, 154:14 Filed [1] - 2:12 files [2] - 17:6, 21:1 finance [1] - 76:9 findings [10] - 57:10, 116:5, 116:8, 117:14, 117:25, 119:5, 127:19, 136:10, 143:12, 145:14 fine [4] - 7:14, 48:11, 87:1, 157:1 finer [2] - 25:12, 129:16 Finland [1] - 153:22 firm [1] - 139:19 First [1] - 153:8 first [21] - 11:22, 24:7, 38:6, 43:11, 43:19, 75:9, 104:3, 104:18, 116:22, 118:15, 120:9, 126:2, 127:6, 132:16, 135:21, 137:22, 138:14, 148:8, 150:13, 155:22, 156:5 five [1] - 152:11 flies [1] - 143:20 Florida [1] - 48:23</p>	<p>FM [1] - 62:1 focus [4] - 36:25, 84:2, 158:14, 158:15 focused [4] - 14:3, 36:4, 36:10, 84:23 focuses [2] - 83:23, 84:12 focusing [3] - 8:16, 8:18, 153:20 folder [3] - 19:25, 42:11, 73:13 folders [1] - 20:15 Foliart [12] - 2:15, 37:18, 38:23, 112:12, 116:12, 116:18, 116:23, 117:7, 117:12, 117:19, 117:22, 118:5 folks [2] - 80:10, 82:4 follow [4] - 63:9, 103:4, 115:1, 117:3 follow-on [1] - 103:4 follow-up [1] - 117:3 following [4] - 25:3, 115:22, 151:20, 161:7 follows [2] - 3:12, 156:19 font [1] - 120:7 food [1] - 92:17 FOR [1] - 163:9 forbid [1] - 157:23 force [1] - 124:4 foregoing [4] - 160:10, 161:2, 161:3, 161:20 forever [2] - 129:1, 158:3 forgetting [1] - 41:22 forgive [1] - 11:15 forgotten [3] - 42:13, 122:3, 128:24 form [5] - 38:5, 99:11, 148:17, 161:5, 162:3 formed [3] - 91:13, 91:14, 91:23 forming [1] - 149:18 forms [1] - 27:25 forth [8] - 6:6, 9:12, 12:14, 40:4, 54:13, 62:2, 62:10, 137:14 forward [1] - 43:16 fought [1] - 134:19 Four [1] - 152:6 four [5] - 7:19, 132:3, 132:4, 148:9, 158:17 four-page [1] - 148:9 fourth [1] - 25:17 fraction [1] - 35:8</p>	<p>frame [1] - 125:14 frankly [1] - 73:24 free [7] - 5:9, 61:14, 61:16, 114:7, 114:17, 117:1, 117:7 frequencies [10] - 34:8, 34:16, 34:22, 34:25, 65:19, 106:13, 128:8, 146:4, 146:5, 153:1 frequency [12] - 35:2, 35:10, 67:5, 67:13, 68:7, 90:18, 97:7, 97:12, 102:21, 106:11, 106:14, 106:22 frequent [1] - 97:12 frequently [1] - 29:22 Friedman [57] - 2:19, 3:5, 3:19, 15:14, 15:21, 15:22, 16:12, 17:19, 20:7, 20:24, 37:14, 38:17, 39:6, 39:19, 40:1, 40:8, 40:11, 42:15, 42:23, 43:2, 43:8, 44:17, 44:18, 69:5, 82:25, 83:21, 84:14, 84:22, 85:19, 98:12, 98:21, 99:6, 104:23, 107:15, 112:9, 119:15, 119:20, 119:25, 120:19, 122:22, 123:5, 123:11, 123:23, 124:2, 124:7, 124:18, 124:20, 125:13, 126:6, 127:9, 129:10, 140:9, 140:23, 146:19, 146:20, 153:14, 163:6 FRIEDMAN [1] - 1:6 Friedman's [19] - 15:10, 17:13, 36:19, 37:24, 40:12, 42:8, 66:9, 84:25, 101:9, 101:13, 106:24, 111:18, 112:8, 113:1, 120:5, 123:21, 124:24, 129:4, 146:9 front [8] - 16:17, 16:21, 43:24, 45:5, 55:25, 72:10, 116:11, 147:11 full [10] - 9:2, 18:24, 19:5, 24:14, 35:22, 62:22, 63:6, 84:1, 86:3, 160:10</p>
F				
<p>fact [15] - 34:20, 50:19, 62:14, 70:23, 77:9, 78:6, 78:8, 97:21, 106:20, 115:8, 116:6, 122:16, 123:13, 134:18, 138:14 factor [3] - 13:23, 14:1, 66:25 factors [1] - 130:16 factual [2] - 156:4, 156:21 fade [1] - 46:10 fair [4] - 35:6, 63:17, 95:9, 125:10 fairly [3] - 14:2, 65:10, 149:25 faithful [1] - 137:25 Falcioni [3] - 2:14, 110:3, 111:15 fall [2] - 88:6, 88:10 falling [1] - 12:7 falling-out [1] - 12:7 falls [8] - 88:22, 89:5, 89:15, 89:19, 90:12, 90:15, 138:19, 140:9 familiar [5] - 6:25,</p>				

funds [1] - 15:3	155:17 government [1] - 12:13 Government [3] - 7:24, 75:13, 147:19 governments [5] - 55:11, 72:11, 72:18, 73:9, 75:13 GPS [1] - 65:22 grab [1] - 91:3 grain [1] - 121:4 great [9] - 3:21, 4:2, 44:22, 90:10, 94:14, 101:15, 101:24, 106:18, 142:17 greater [10] - 37:2, 38:19, 62:3, 62:4, 66:7, 78:11, 91:23, 92:16, 99:7, 132:24 greatly [1] - 139:10 ground [1] - 52:7 grounding [1] - 89:4 GROUP [2] - 1:25, 163:1 group [7] - 24:15, 34:5, 70:24, 78:23, 80:10, 113:6 groups [2] - 70:23, 143:7 guard [1] - 69:13 guess [24] - 6:11, 12:23, 17:25, 19:21, 24:22, 44:12, 48:3, 51:4, 53:15, 84:9, 97:18, 104:11, 106:20, 106:21, 107:21, 107:24, 119:3, 122:5, 125:18, 131:11, 138:17, 140:22, 140:24, 156:15 guideline [2] - 59:7, 59:8 guinea [1] - 143:18 gun [1] - 70:14 guns [1] - 69:23 guy [1] - 136:5 guys [1] - 156:17	happier [1] - 34:18 hard [4] - 22:21, 55:25, 71:5, 72:22 Hardell [3] - 81:14, 152:1, 155:10 harm [18] - 52:17, 58:11, 59:2, 59:14, 60:8, 72:17, 75:12, 84:12, 84:13, 93:17, 95:21, 96:22, 97:21, 98:21, 99:2, 99:7, 135:11, 140:1 harmful [7] - 63:16, 69:5, 85:13, 93:1, 111:23, 140:6, 140:7 harmless [1] - 68:15 hazard [3] - 8:10, 61:11, 62:15 hazardous [2] - 65:25, 153:3 hazards [5] - 8:8, 71:11, 71:12, 77:14, 147:12 head [4] - 86:6, 92:19, 93:6, 128:14 headache [1] - 31:15 headaches [1] - 121:14 headed [2] - 11:4, 76:14 heading [10] - 82:10, 82:21, 83:15, 104:4, 104:25, 113:16, 114:4, 123:19, 123:25, 124:1 headings [1] - 82:9 health [53] - 5:20, 6:2, 6:13, 8:11, 8:15, 9:5, 9:6, 9:8, 45:24, 47:13, 52:8, 52:25, 54:4, 54:6, 55:10, 58:22, 59:5, 60:8, 60:12, 62:15, 63:12, 66:3, 69:24, 71:8, 71:9, 71:11, 73:6, 73:22, 75:19, 76:1, 76:2, 77:12, 77:17, 79:5, 83:21, 83:23, 85:8, 85:15, 89:21, 94:14, 94:22, 97:14, 121:7, 136:3, 139:19, 142:1, 142:3, 142:10, 151:18, 154:2, 154:17 Health [28] - 2:13, 12:2, 55:18, 60:24, 74:2, 74:5, 74:8, 74:10, 74:17, 74:19, 74:25, 75:3, 75:16,	75:17, 76:18, 77:2, 78:6, 79:20, 81:20, 81:21, 82:5, 84:18, 85:12, 111:4, 122:13, 135:25, 149:12, 153:24 healthy [1] - 99:7 hear [2] - 63:9, 92:8 heard [1] - 14:9 heart [1] - 128:14 heartbeat [1] - 31:15 heating [9] - 85:10, 85:14, 85:16, 95:14, 111:14, 111:25, 112:5, 128:22, 144:9 heavily [2] - 37:23, 125:8 heightened [3] - 98:21, 98:22, 99:2 held [1] - 86:5 help [3] - 151:14, 151:24, 152:13 helpful [3] - 30:24, 31:1, 69:3 hematopoietic [1] - 36:5 hereby [2] - 160:3, 161:18 Heroux [11] - 6:25, 7:2, 7:9, 7:10, 7:11, 7:13, 7:16, 8:2, 12:20, 81:4 Hersh [1] - 155:12 hertz [6] - 31:7, 35:2, 67:2, 67:4, 67:14, 90:19 hesitant [1] - 158:2 high [13] - 31:22, 33:11, 34:4, 47:6, 50:20, 51:16, 51:21, 66:21, 68:6, 89:23, 90:5, 133:11, 144:8 high-intensity [1] - 133:11 high-voltage [4] - 47:6, 50:20, 51:16, 51:21 higher [7] - 58:22, 58:23, 64:12, 65:18, 95:7, 113:12, 118:22 highest [1] - 115:5 himself [1] - 42:15 hire [1] - 62:25 hired [4] - 15:25, 69:23, 70:14, 147:23 his/her [2] - 161:20, 161:21 historical [2] - 76:13, 84:19 history [3] - 12:24,	123:21, 135:21 hit [1] - 91:8 hits [1] - 91:9 Hodgkin's [14] - 13:15, 13:16, 13:18, 13:21, 13:23, 14:1, 14:4, 36:20, 37:16, 38:5, 99:11, 126:19, 127:1, 130:14 Hodgkin's/ Waldenstrom's [1] - 127:4 hold [6] - 8:13, 64:1, 72:2, 93:5, 121:6, 157:22 holding [5] - 65:2, 65:6, 65:11, 92:19, 94:16 home [12] - 33:11, 68:24, 85:23, 98:23, 107:2, 132:12, 132:16, 132:24, 132:25, 133:1, 133:8, 134:8 homes [2] - 113:10, 154:3 hope [1] - 38:8 Horizon [1] - 45:18 host [1] - 83:8 hour [5] - 5:7, 6:17, 41:6, 102:10, 144:23 hours [3] - 5:12, 5:14, 93:6 house [20] - 33:6, 36:23, 38:19, 63:22, 86:21, 86:23, 98:14, 106:3, 106:10, 107:10, 107:12, 113:1, 121:10, 133:9, 133:11, 133:25, 134:11, 144:6, 146:10 household [1] - 106:9 Housekeeping [1] - 75:23 houses [1] - 86:20 HsD [1] - 127:22 huge [5] - 35:21, 42:11, 57:23, 79:1, 141:10 Human [1] - 18:13 human [24] - 9:9, 58:22, 59:14, 60:8, 60:12, 61:7, 61:11, 76:12, 95:10, 95:21, 96:10, 96:22, 111:8, 119:4, 119:8, 128:5, 142:1, 142:3, 144:25, 151:16, 152:18, 152:23,
G	H			
gastrointestinal [1] - 131:9 gene [1] - 61:2 general [19] - 7:5, 7:16, 8:5, 8:7, 8:13, 10:14, 10:15, 10:18, 10:20, 10:24, 11:3, 12:12, 15:6, 85:7, 93:4, 141:21, 142:7, 143:8, 155:8 generalization [1] - 92:6 generally [3] - 56:8, 117:14, 151:10 generals [1] - 12:15 generate [11] - 61:21, 62:21, 88:7, 89:20, 92:16, 92:18, 97:18, 97:24, 116:19, 144:1, 152:25 generated [8] - 89:24, 90:22, 93:23, 94:11, 94:24, 95:3, 117:12, 117:22 generates [5] - 95:14, 142:5, 145:19, 146:1, 152:25 generating [3] - 91:16, 107:5, 116:5 generation [13] - 61:14, 67:7, 89:10, 89:13, 92:16, 93:18, 94:17, 95:10, 96:4, 96:15, 141:12, 143:22, 146:16 genes [1] - 61:6 genetic [1] - 62:10 Geneva [1] - 81:20 geomagnetic [1] - 153:10 gigahertz [1] - 67:14 given [3] - 115:10, 115:11, 160:11 gland [1] - 128:24 glaring [1] - 151:11 glioma [1] - 82:11 gliomas [3] - 110:22, 111:15, 128:16 global [1] - 9:5 glutathione [1] - 91:19 Glycel [1] - 13:25 goal [3] - 56:13, 56:14, 64:9 God [1] - 157:23 gotcha [5] - 37:4, 64:7, 93:11, 138:23,	half [1] - 41:6 halfway [1] - 26:3 hand [7] - 6:16, 23:18, 26:4, 30:9, 71:8, 86:21, 160:15 handwritten [3] - 40:20, 44:20, 125:22 Handwritten [1] - 2:20 Hanson [1] - 163:16			

153:2 Humans [1] - 118:18 humans [6] - 8:14, 60:2, 60:15, 84:12, 118:19, 128:23 husband [1] - 33:4 hydro [1] - 50:17 hypersensitive [6] - 34:1, 34:7, 35:8, 35:9, 39:14, 63:21 hypersensitivity [7] - 29:17, 32:13, 33:7, 35:1, 39:3, 39:7, 53:6 hypothesis [7] - 38:25, 116:5, 116:19, 117:12, 117:21, 131:16, 142:8 hypothesis - generating [1] - 116:5 hypothetically [1] - 98:12	141:25 implement [2] - 42:3, 57:12 implementation [4] - 29:4, 29:9, 48:18, 52:6 importance [1] - 129:8 important [21] - 6:18, 35:24, 35:25, 37:8, 37:12, 66:1, 74:2, 84:5, 85:10, 88:11, 95:23, 96:25, 97:16, 103:15, 105:11, 111:3, 111:23, 138:20, 138:25, 157:9, 157:17 imposition [1] - 124:16 impossible [1] - 57:7 impression [1] - 49:20 IN [1] - 160:15 inaccurately [1] - 59:11 inactivate [1] - 92:22 inbox [1] - 21:1 include [3] - 8:19, 27:14, 57:6 included [1] - 36:2 includes [3] - 68:5, 75:5, 153:9 including [5] - 8:20, 60:15, 75:13, 99:22, 133:8 incompatible [2] - 76:11, 85:17 incorrectly [1] - 37:6 increase [9] - 60:12, 63:16, 100:4, 106:3, 117:24, 127:1, 127:2, 131:17 increased [8] - 121:14, 127:5, 131:13, 132:7, 132:10, 132:11, 136:11, 141:5 increases [2] - 94:17, 141:6 increasing [2] - 114:6, 114:16 incredible [1] - 68:17 incrementally [1] - 63:15 independent [2] - 78:15, 116:3 indicate [1] - 96:6 indicated [2] - 29:15, 77:20 indicating [1] - 163:11 indication [2] - 90:10, 145:4	indirectly [1] - 85:1 individual [10] - 9:8, 52:13, 53:2, 108:2, 108:3, 139:10, 139:18, 140:2 individual 's [1] - 92:20 individuals [8] - 33:25, 34:15, 37:3, 37:22, 38:2, 75:2, 120:16, 147:12 individuals ' [1] - 8:11 induced [1] - 111:20 induces [1] - 141:22 industry [2] - 74:3, 153:10 infer [1] - 95:19 inferences [2] - 115:6, 146:8 inferior [1] - 152:8 influences [2] - 106:11, 107:10 inform [1] - 106:23 information [37] - 32:23, 39:18, 39:20, 39:21, 39:25, 40:12, 40:24, 42:8, 42:14, 42:21, 48:10, 53:4, 66:9, 66:14, 73:17, 83:21, 85:25, 86:2, 86:13, 87:24, 88:21, 89:2, 97:17, 98:5, 98:8, 98:11, 101:18, 102:1, 120:19, 121:15, 123:23, 123:24, 124:19, 134:13, 156:4, 156:21, 157:25 informed [1] - 124:9 infrastructure [4] - 29:5, 42:3, 48:19, 52:7 initial [2] - 96:14, 112:19 initiative [1] - 15:23 injected [1] - 121:17 injury [1] - 146:2 inside [1] - 133:25 insofar [2] - 20:6, 50:15 installation [1] - 32:24 installed [4] - 32:21, 133:21, 133:22, 156:12 instead [2] - 14:24, 45:20 Institute [4] - 74:17, 79:19, 110:17, 128:17 institutions [3] -	11:25, 70:22, 72:19 instruct [1] - 9:17 instruction [2] - 9:21, 10:2 INSTRUCTIONS [2] - 162:1, 163:9 insufficient [1] - 53:7 intense [1] - 87:8 intensities [13] - 23:10, 57:2, 85:8, 85:15, 95:13, 96:24, 111:13, 136:19, 142:17, 142:22, 143:5, 144:8, 145:11 intensity [28] - 31:22, 60:4, 83:17, 90:3, 90:9, 95:12, 95:17, 95:20, 97:2, 106:12, 110:25, 111:24, 128:19, 128:21, 133:11, 133:14, 138:9, 138:11, 138:18, 138:21, 138:24, 139:2, 139:9, 141:21, 144:2, 144:11, 145:25, 146:6 Intensity [2] - 22:11, 22:24 intent [1] - 89:1 intention [1] - 15:12 interest [7] - 10:17, 55:5, 69:13, 70:17, 70:19, 75:1, 75:3 interested [1] - 19:2 interesting [3] - 28:10, 31:16, 133:4 interests [2] - 70:21, 74:24 international [1] - 55:12 International [6] - 74:8, 78:22, 79:19, 111:3, 128:3 Internet [2] - 62:23, 63:7 interpreting [1] - 114:9 interrupt [1] - 48:23 interval [2] - 36:7, 117:3 intervening [1] - 158:17 intolerance [1] - 82:23 invariably [1] - 38:6 investigators [1] - 31:11 invited [3] - 54:1, 55:2, 79:15 invites [1] - 156:13	inviting [3] - 79:23, 155:22, 155:23 invitro [1] - 56:24 involve [3] - 20:20, 27:18, 47:18 involved [15] - 11:18, 13:16, 13:19, 13:24, 15:18, 20:2, 45:23, 47:25, 53:19, 69:21, 77:10, 77:13, 85:23, 134:22 involvement [2] - 14:9, 135:21 involves [1] - 108:20 involving [9] - 13:21, 14:5, 18:7, 20:19, 45:18, 47:5, 48:5, 50:6, 52:12 ionizing [6] - 9:12, 68:7, 68:19, 84:8, 91:7, 136:7 isolated [8] - 56:25, 57:22, 58:16, 58:17, 60:4, 95:8, 95:18, 142:2 Isotope [1] - 103:6 Israel [1] - 11:16 Israeli [1] - 11:17 issue [19] - 10:21, 11:18, 15:2, 27:2, 27:11, 39:3, 39:10, 51:19, 55:10, 57:3, 76:17, 77:10, 82:12, 85:11, 89:9, 99:24, 118:9, 147:2, 157:19 issues [12] - 7:5, 7:6, 7:17, 10:17, 15:19, 33:15, 44:10, 54:8, 76:5, 79:17, 83:18, 157:23 Italy [2] - 74:6, 110:17 items [1] - 21:23 itself [1] - 114:2
I				
IARC [2] - 128:3, 131:4 ICMIRP [1] - 80:7 ICNIRP [1] - 74:9 ICNRP [3] - 78:22, 79:9, 85:12 idea [4] - 43:21, 49:19, 88:2, 129:11 identified [2] - 14:15, 26:19 identify [7] - 30:13, 32:16, 59:12, 59:18, 59:20, 71:11, 109:12 idiopathic [1] - 82:23 IGM [1] - 127:5 ignored [2] - 72:18, 137:16 II [1] - 2:11 Ilhan [1] - 144:19 ILHAN [1] - 144:19 ill [1] - 30:10 illegal [1] - 126:14 illness [5] - 30:19, 33:2, 40:13, 82:22, 84:15 illnesses [1] - 109:10 imbalance [1] - 73:11 immediately [2] - 127:12, 133:12 immune [3] - 112:22, 129:23, 130:8 impact [4] - 64:5, 107:15, 126:25,				
J				
January [5] - 1:17, 3:3, 160:16, 163:4, 163:10 Jerry [1] - 155:10 Jersey [1] - 47:4 job [1] - 71:11 joint [3] - 11:17, 40:16, 126:19 journal [7] - 26:10, 69:10, 73:1, 73:5, 73:7, 109:4, 109:25 Journal [3] - 26:19, 109:6, 109:15 journals [2] - 69:18,				

72:23 judge [2] - 4:21, 132:24 judgment [4] - 65:7, 73:10, 77:14, 102:2 judgments [3] - 71:3, 76:25, 77:2 Judicial [1] - 153:13 jurisdiction [6] - 13:4, 48:8, 50:9, 52:4, 52:5, 147:4 jurisdictions [1] - 12:18 jury [1] - 4:21 justification [1] - 100:5	laboratory [1] - 135:24 Lai [1] - 2:15 LAMECH [1] - 157:11 Lamech [6] - 32:19, 32:22, 33:13, 41:11, 157:11, 157:12 language [2] - 120:5, 141:16 lap [3] - 65:11, 65:14, 94:17 laptop [3] - 65:11, 65:14, 94:16 large [8] - 28:8, 30:6, 32:23, 42:19, 76:4, 84:13, 144:11, 148:14 largely [1] - 63:10 larger [2] - 108:24, 120:7 largest [1] - 128:9 last [19] - 32:7, 38:3, 43:5, 68:3, 80:12, 87:11, 100:8, 103:17, 104:4, 105:13, 105:16, 113:15, 114:3, 116:2, 135:6, 140:12, 140:14, 155:18 lastly [1] - 147:25 Law [1] - 153:13 law [2] - 4:12, 153:12 laws [2] - 52:14, 123:22 lawsuits [1] - 130:13 lawyer [4] - 11:16, 16:1, 16:3, 155:6 lawyers [3] - 20:16, 123:15, 154:24 laymen's [2] - 90:20, 127:3 lazy [1] - 110:1 lead [4] - 12:5, 42:16, 42:18, 96:13 leading [1] - 85:2 leads [1] - 96:4 learn [1] - 135:16 learning [1] - 94:19 least [14] - 43:7, 49:23, 51:12, 58:16, 58:17, 59:24, 60:4, 66:16, 69:12, 73:11, 74:21, 80:4, 85:1, 156:5 leave [4] - 57:14, 64:21, 156:17, 158:22 LECHI [1] - 118:9 lectures [2] - 10:4, 10:6	led [1] - 79:23 Lee [2] - 155:11 left [2] - 12:8, 45:10 legal [5] - 13:16, 20:1, 49:15, 52:21, 123:21 legislation [1] - 149:15 legislative [1] - 19:4 legislator [1] - 19:7 Legislature [6] - 15:21, 18:21, 18:25, 19:2, 19:6, 153:8 legwork [1] - 53:25 length [1] - 156:2 lengthy [2] - 150:19, 151:2 Leonard [1] - 155:10 Lerchi [7] - 27:15, 28:6, 118:8, 118:9, 118:15, 118:25, 157:14 LERCHI [3] - 28:6, 118:15, 157:14 Lesintisky [1] - 155:10 less [10] - 31:5, 34:4, 65:19, 67:5, 86:5, 87:16, 88:14, 110:12, 131:10, 131:14 lesser [1] - 59:23 letter [5] - 155:21, 155:22, 156:3, 156:22, 162:11 leukemia [20] - 36:14, 37:10, 37:19, 37:20, 38:15, 89:6, 99:12, 112:17, 112:19, 112:20, 113:6, 113:7, 113:9, 113:13, 129:18, 129:21, 130:2, 131:21, 132:7, 136:11 leukemias [1] - 112:22 level [25] - 8:12, 54:25, 55:3, 56:23, 57:5, 57:17, 57:18, 57:20, 58:1, 59:18, 60:2, 60:5, 60:7, 62:12, 64:15, 66:10, 67:4, 68:14, 78:2, 112:4, 139:2, 139:4, 139:7, 139:9, 142:13 levels [18] - 56:8, 56:24, 57:22, 57:24, 58:14, 58:21, 60:13, 68:11, 94:25, 95:4, 95:5, 95:7, 95:20, 110:14, 127:5, 134:12, 142:23,	152:4 levied [1] - 73:2 liable [1] - 8:14 licensed [1] - 13:3 life [5] - 64:5, 68:13, 68:15, 132:18, 153:2 lifestyle [1] - 62:18 lifetime [1] - 39:23 likelihood [2] - 101:6, 101:9 likely [8] - 17:18, 20:6, 33:18, 36:6, 66:12, 91:8, 101:14, 101:16 limit [2] - 58:9, 67:11 limitation [2] - 114:22, 115:3 limitations [5] - 113:17, 113:19, 115:16, 117:17, 118:3 limited [3] - 114:24, 115:6, 115:21 Limits [1] - 118:18 limits [1] - 5:16 line [10] - 47:6, 47:10, 47:14, 50:17, 50:20, 51:16, 51:22, 77:20, 89:7, 162:5 lines [10] - 8:16, 8:22, 49:11, 49:12, 50:14, 51:3, 89:1, 105:24, 114:12, 136:4 link [2] - 126:18, 149:14 list [11] - 3:23, 17:22, 21:16, 22:3, 45:1, 45:15, 57:9, 122:5, 131:5, 147:9, 162:5 LIST [1] - 2:6 List [2] - 2:12, 2:19 listed [6] - 17:23, 24:6, 124:5, 142:25, 147:6, 147:9 listing [3] - 11:12, 23:9, 155:9 lists [3] - 17:24, 24:24, 156:12 literature [7] - 10:6, 14:15, 29:20, 35:21, 92:3, 128:1, 138:8 litigation [2] - 12:6, 158:15 live [3] - 99:17, 99:19, 133:8 lives [1] - 66:11 living [1] - 69:24 Lloyd [1] - 155:12 Logistic [1] - 153:17 logistics [1] - 54:11 look [28] - 9:22, 16:23,	18:5, 20:5, 25:13, 33:15, 43:18, 44:8, 54:16, 82:15, 90:11, 96:2, 105:1, 113:15, 116:10, 122:7, 125:22, 130:18, 137:17, 137:24, 138:4, 141:18, 142:24, 143:6, 144:19, 146:13, 158:1 looked [12] - 24:22, 30:6, 82:8, 90:9, 90:13, 94:1, 113:5, 113:9, 118:20, 130:7, 133:19, 141:3 looking [12] - 22:3, 22:13, 22:14, 25:7, 55:16, 72:24, 82:9, 83:13, 86:3, 117:2, 117:9, 143:7 looks [5] - 24:16, 24:19, 43:23, 115:13, 126:2 lost [1] - 53:12 low [17] - 35:2, 57:2, 57:5, 57:22, 60:13, 68:11, 68:14, 83:17, 90:18, 95:12, 95:17, 95:20, 96:24, 134:12, 136:19, 141:21 Low [2] - 22:11, 22:24 low-intensity [5] - 83:17, 95:12, 95:17, 95:20, 141:21 lower [16] - 37:22, 56:16, 56:24, 58:2, 64:13, 95:13, 102:21, 106:11, 106:12, 106:13, 106:14, 106:22, 110:25, 111:24, 113:21 lower-frequency [3] - 106:11, 106:14, 106:22 lower-intensity [1] - 106:12 lunch [1] - 5:14 lung [1] - 131:8 lymphoma [14] - 13:17, 13:21, 27:2, 27:8, 27:12, 28:11, 28:24, 36:20, 37:16, 38:5, 38:10, 99:12, 111:22, 112:21 lymphomas [5] - 13:15, 27:19, 112:22, 118:21,
K	Kansas [1] - 7:20 keep [3] - 21:2, 41:22, 127:13 keeping [1] - 38:18 Kent [1] - 81:6 Key [1] - 55:17 kids [1] - 63:7 kind [13] - 9:20, 13:7, 14:15, 84:11, 106:8, 112:1, 115:15, 121:15, 130:22, 131:1, 131:3, 147:10, 151:17 kinds [10] - 10:4, 105:25, 117:20, 130:17, 130:23, 131:5, 131:7, 131:18, 131:19, 131:21 kitchen [2] - 98:13, 99:10 knowing [2] - 58:8, 139:25 knowledge [7] - 42:1, 42:5, 52:24, 55:9, 93:16, 136:6, 137:6 known [1] - 118:1 knows [1] - 100:24 Kosrovani [2] - 46:1, 48:5 Kumar [1] - 155:12 Kundi [1] - 152:1			
L	laboratories [5] - 136:13, 141:3, 141:13, 143:4, 145:12 Laboratories [1] - 135:23			

118:23	64:25, 66:13	mechanisms [8] - 60:25, 68:17, 82:2, 84:3, 91:17, 91:25, 92:13, 93:25	151:25	126:18, 126:25, 133:6, 133:21, 142:21, 144:15, 146:18, 147:13, 152:19, 154:3, 154:9, 154:11, 156:11	
M	March [3] - 43:12, 119:21, 124:25	medical [8] - 6:16, 12:25, 39:16, 42:8, 101:8, 101:13, 102:6, 123:21	metabolism [1] - 91:14	Meters [1] - 104:4	
M.D [5] - 1:13, 2:1, 3:11, 161:10, 163:7	Maria [2] - 154:7, 154:10	medically [2] - 79:3, 105:15	metabolite [1] - 145:4	methods [1] - 6:5	
macroglobulinemia [3] - 13:8, 13:12, 13:14	mark [3] - 45:11, 45:14, 125:20	medically -oriented [1] - 79:3	metabolize [1] - 92:17	Mexico [1] - 154:15	
Madison [1] - 154:13	Marked [1] - 2:8	medicine [3] - 5:21, 13:1, 13:3	metal [1] - 106:10	MF [6] - 7:5, 7:6, 114:6, 114:16, 115:5	
magnetic [22] - 7:6, 7:17, 8:22, 31:7, 31:8, 34:21, 50:7, 66:21, 66:24, 67:2, 67:4, 67:22, 67:23, 87:23, 89:1, 89:8, 113:11, 114:6, 132:8, 136:4, 136:11, 152:25	marked [3] - 45:3, 81:12, 119:18	meet [1] - 15:21	meter [70] - 33:5, 33:8, 36:23, 37:13, 38:18, 38:19, 63:3, 64:14, 68:25, 69:4, 70:3, 85:5, 85:20, 86:1, 86:5, 86:7, 86:12, 86:17, 87:2, 89:14, 90:4, 90:9, 93:19, 94:2, 95:6, 96:22, 98:4, 98:10, 98:12, 98:23, 99:3, 99:9, 101:19, 107:2, 107:6, 112:25, 121:10, 126:20, 133:1, 133:5, 133:8, 133:10, 133:12, 133:15, 133:17, 133:20, 133:25, 134:3, 134:16, 134:25, 135:2, 135:5, 138:11, 142:14, 144:3, 144:6, 144:7, 144:10, 144:11, 144:16, 145:1, 145:10, 146:1, 146:3, 146:5, 146:10, 146:13, 151:17	MFs [1] - 71:14	
magnitude [5] - 56:16, 58:10, 59:24, 101:19, 110:25	markers [2] - 96:2, 145:5	meetings [1] - 12:15	microwatts [11] - 56:15, 56:19, 57:13, 58:2, 59:21, 59:25, 60:9, 60:13, 64:8, 64:13, 74:12	mice [5] - 27:3, 27:13, 27:17, 27:19, 118:19	
mail [1] - 21:12	Marsonique [1] - 152:9	megahertz [2] - 67:5, 144:22	microwave [5] - 33:2, 82:22, 84:18, 85:13, 105:4	Michigan [8] - 2:17, 29:2, 29:8, 41:16, 47:21, 48:13, 48:17, 51:10	
main [2] - 55:1, 128:6	Massachusetts [1] - 137:19	MELISSA [1] - 160:20	middle [2] - 25:15, 26:3	might [7] - 66:15, 69:5, 102:3, 140:6, 148:1, 158:7	
MAINE [2] - 1:1, 1:9	master's [1] - 54:25	Melissa [7] - 1:16, 3:1, 100:8, 118:14, 149:4, 160:2, 160:19	Meter [2] - 122:13, 153:24	Migration [1] - 118:12	
Maine [48] - 1:17, 3:3, 3:19, 15:15, 15:19, 15:24, 16:13, 18:2, 18:8, 18:13, 18:14, 18:17, 18:21, 19:3, 19:15, 19:18, 20:9, 21:3, 21:25, 22:4, 23:15, 23:22, 24:21, 27:7, 41:16, 42:6, 51:10, 68:22, 68:24, 70:2, 70:3, 71:15, 104:23, 119:12, 120:2, 124:4, 131:24, 148:2, 148:25, 153:8, 153:14, 153:15, 156:19, 156:20, 160:3, 161:18, 163:6	material [2] - 20:10, 124:13	member [1] - 19:1	metering [4] - 29:5, 42:3, 48:19, 52:6	mildly [1] - 140:6	
matters [2] - 10:2, 13:20	materials [1] - 17:1	members [1] - 79:4	meters [71] - 8:16, 8:19, 31:20, 31:21, 31:24, 32:11, 32:21, 32:25, 33:18, 33:24, 35:4, 35:10, 35:20, 41:19, 42:18, 46:25, 47:6, 49:5, 49:14, 49:21, 49:25, 51:5, 51:7, 51:10, 55:24, 56:3, 62:20, 62:23, 63:1, 63:2, 63:13, 64:8, 66:5, 85:2, 85:22, 85:24, 86:19, 88:4, 89:24, 90:8, 93:20, 94:25, 95:1, 97:6, 97:11, 97:18, 97:24, 98:6, 99:22, 103:25, 104:3, 104:8, 104:18, 107:5, 120:15, 121:5, 126:7,	mind [9] - 38:17, 64:19, 96:20, 100:2, 115:9, 127:9, 127:12, 129:1, 130:1	mind [9] - 38:17, 64:19, 96:20, 100:2, 115:9, 127:9, 127:12, 129:1, 130:1
matter [14] - 17:14, 18:14, 18:15, 19:19, 21:25, 23:23, 70:16, 77:9, 80:17, 81:15, 100:17, 123:13, 134:18, 163:11	matter [14] - 17:14, 18:14, 18:15, 19:19, 21:25, 23:23, 70:16, 77:9, 80:17, 81:15, 100:17, 123:13, 134:18, 163:11	memoranda [1] - 11:2	meters [71] - 8:16, 8:19, 31:20, 31:21, 31:24, 32:11, 32:21, 32:25, 33:18, 33:24, 35:4, 35:10, 35:20, 41:19, 42:18, 46:25, 47:6, 49:5, 49:14, 49:21, 49:25, 51:5, 51:7, 51:10, 55:24, 56:3, 62:20, 62:23, 63:1, 63:2, 63:13, 64:8, 66:5, 85:2, 85:22, 85:24, 86:19, 88:4, 89:24, 90:8, 93:20, 94:25, 95:1, 97:6, 97:11, 97:18, 97:24, 98:6, 99:22, 103:25, 104:3, 104:8, 104:18, 107:5, 120:15, 121:5, 126:7,	minds [1] - 49:21	minds [1] - 49:21
McCarty [3] - 2:14, 30:23, 107:22	McCarty [3] - 2:14, 30:23, 107:22	memories [1] - 46:10	mentioned [13] - 8:23, 18:20, 20:11, 48:13, 53:18, 81:11, 118:6, 127:25, 128:3, 133:4, 137:8, 157:8, 162:11	mine [1] - 75:24	mine [1] - 75:24
McLaughlin [17] - 16:4, 16:6, 17:13, 17:15, 17:16, 17:24, 20:8, 20:24, 43:1, 44:13, 149:25, 150:11, 151:2, 152:14, 155:2, 155:3, 155:22	McLaughlin [17] - 16:4, 16:6, 17:13, 17:15, 17:16, 17:24, 20:8, 20:24, 43:1, 44:13, 149:25, 150:11, 151:2, 152:14, 155:2, 155:3, 155:22	memory [1] - 147:16	mentioned [13] - 8:23, 18:20, 20:11, 48:13, 53:18, 81:11, 118:6, 127:25, 128:3, 133:4, 137:8, 157:8, 162:11	mini [1] - 81:23	mini [1] - 81:23
MDA [2] - 145:4, 145:8	MDA [2] - 145:4, 145:8	meningioma [1] - 82:11	Mentioned [1] - 2:8	minimal [2] - 54:23, 98:18	minimal [2] - 54:23, 98:18
ME [2] - 163:2, 163:17	ME [2] - 163:2, 163:17	ment [1] - 118:7	MERENBERG [1] - 160:20	minimization [1] - 72:1	minimization [1] - 72:1
mean [15] - 28:15, 39:23, 60:10, 68:14, 70:15, 75:15, 83:2, 100:20, 103:1, 106:12, 114:19, 127:6, 135:14, 144:17	mean [15] - 28:15, 39:23, 60:10, 68:14, 70:15, 75:15, 83:2, 100:20, 103:1, 106:12, 114:19, 127:6, 135:14, 144:17	mention [1] - 118:7	Merrill [14] - 1:21, 22:6, 40:1, 40:11, 43:16, 43:17, 44:6, 44:9, 45:2, 140:23, 150:12, 155:25, 156:6, 158:23	minimize [3] - 59:5, 69:24, 79:5	minimize [3] - 59:5, 69:24, 79:5
means [4] - 65:12, 72:20, 90:21, 115:19	means [4] - 65:12, 72:20, 90:21, 115:19	mentioned [13] - 8:23, 18:20, 20:11, 48:13, 53:18, 81:11, 118:6, 127:25, 128:3, 133:4, 137:8, 157:8, 162:11	Merrill [14] - 1:21, 22:6, 40:1, 40:11, 43:16, 43:17, 44:6, 44:9, 45:2, 140:23, 150:12, 155:25, 156:6, 158:23	minnesota [1] - 50:14	minnesota [1] - 50:14
meant [3] - 92:24, 101:5, 121:25	meant [3] - 92:24, 101:5, 121:25	metaanalyses [1] -		minor [1] - 20:1	minor [1] - 20:1
measured [1] - 107:3	measured [1] - 107:3			minority [1] - 78:3	minority [1] - 78:3
measurement [2] - 90:3, 133:14	measurement [2] - 90:3, 133:14			minute [1] - 100:7	minute [1] - 100:7
measuring [2] - 134:2, 145:3	measuring [2] - 134:2, 145:3			minutes [1] - 3:16	minutes [1] - 3:16
mechanism [7] - 61:15, 84:6, 84:10, 93:12, 94:14, 117:25, 142:10	mechanism [7] - 61:15, 84:6, 84:10, 93:12, 94:14, 117:25, 142:10			MIR [1] - 155:18	MIR [1] - 155:18

<p>152:1 mistake [2] - 24:16, 122:11 mistaken [1] - 151:3 misunderstanding [1] - 78:18 misunderstood [1] - 151:1 mitochondria [1] - 91:15 mobile [1] - 82:10 modern [3] - 57:4, 132:18, 134:14 Mohawk [1] - 135:8 molecule [6] - 61:5, 90:25, 91:1, 91:6, 91:9 moment [11] - 17:15, 18:20, 19:8, 26:21, 30:18, 48:9, 57:16, 82:16, 93:21, 94:2, 130:24 money [4] - 15:8, 20:20, 55:8, 75:20 monitored [1] - 113:9 Monsanto [3] - 13:24, 47:19, 48:12 month [1] - 45:17 monthly [1] - 126:10 Montreal [2] - 49:23, 137:9 Moon [1] - 152:1 Morgan [1] - 155:12 morning [4] - 3:15, 3:18, 41:9, 97:23 Morrison [1] - 50:4 most [31] - 15:8, 18:7, 19:25, 20:18, 22:22, 31:18, 37:7, 45:16, 45:21, 45:22, 47:18, 54:2, 54:9, 56:16, 65:1, 78:9, 90:15, 91:8, 92:4, 93:7, 93:24, 128:9, 131:9, 133:23, 136:7, 137:13, 139:20, 142:2, 142:8, 143:15 Most [1] - 104:8 mouse [1] - 119:6 move [2] - 48:4, 134:10 moved [2] - 46:4, 47:16 MPUC [3] - 2:10, 2:11, 2:12 MR [47] - 3:14, 4:3, 4:5, 4:9, 21:14, 21:20, 22:16, 22:19, 41:14, 43:18, 43:20, 43:21, 43:22, 45:8,</p>	<p>45:10, 45:13, 80:25, 100:15, 102:12, 102:14, 102:15, 102:16, 102:17, 103:11, 103:13, 103:16, 103:17, 103:19, 103:24, 104:2, 105:1, 105:6, 140:17, 140:20, 145:22, 149:6, 150:16, 150:22, 150:25, 155:5, 155:7, 156:8, 156:15, 157:1, 157:2, 158:25, 159:1 multiple [6] - 13:15, 43:13, 87:4, 87:5, 87:10, 143:7 muscles [1] - 152:24 must [8] - 17:9, 72:6, 104:21, 120:7, 122:25, 126:20, 147:13, 162:8 mutations [1] - 61:19 Myers [1] - 46:14 Mykhaylo [1] - 154:6</p>	<p>N</p> <p>name [9] - 3:16, 11:21, 11:22, 16:3, 19:7, 19:10, 32:19, 81:5, 93:22 named [6] - 25:16, 81:6, 81:8, 160:4, 160:13, 161:18 nano [2] - 67:11, 67:12 national [1] - 136:20 National [8] - 2:16, 28:4, 28:9, 28:12, 29:1, 79:19, 127:20, 128:10 nations [1] - 72:11 natural [3] - 67:20, 88:17, 151:16 nature [1] - 50:15 near [1] - 74:13 nearby [2] - 91:4, 91:12 nearly [3] - 28:12, 28:14, 28:25 Nebraska [1] - 7:20 necessarily [1] - 71:21 need [11] - 5:8, 18:3, 55:12, 59:3, 62:22, 65:12, 70:11, 79:11, 88:12, 150:14, 156:17 needed [1] - 116:4</p>	<p>nerve [2] - 128:15, 131:7 nerves [1] - 110:19 nervous [2] - 136:14, 152:24 net [1] - 92:4 Netherlands [2] - 73:14, 73:20 network [1] - 134:5 neurobehavioral [1] - 82:17 neurological [1] - 81:25 neuroma [2] - 82:11, 128:15 neuromas [1] - 128:12 never [20] - 10:23, 11:6, 13:1, 15:6, 18:24, 20:12, 37:25, 39:9, 52:19, 59:8, 63:25, 69:17, 77:4, 100:24, 107:2, 128:6, 136:21, 147:3 nevertheless [1] - 121:17 new [5] - 24:9, 77:9, 136:5, 158:18 New [6] - 7:21, 47:4, 134:17, 135:22, 135:24, 136:2 Newman [1] - 147:23 next [10] - 65:13, 102:10, 104:10, 110:13, 116:2, 119:19, 126:15, 138:16, 139:1 NGO [4] - 74:7, 78:16, 78:19, 78:21 Niagara [1] - 135:8 night [1] - 97:23 NIH [2] - 60:23, 79:20 Niko [1] - 153:21 Non [15] - 13:15, 13:16, 13:18, 13:21, 13:23, 14:1, 14:4, 36:20, 37:16, 38:5, 99:11, 126:19, 127:1, 127:4, 130:14 non [1] - 139:3 Non-Hodgkin 's [14] - 13:15, 13:16, 13:18, 13:21, 13:23, 14:1, 14:4, 36:20, 37:16, 38:5, 99:11, 126:19, 127:1, 130:14 Non-Hodgkin 's/ Waldenstrom 's [1] - 127:4 non-safe [1] - 139:3 noncredible [1] -</p>	<p>69:16 none [6] - 12:17, 14:3, 82:12, 123:10, 142:21, 146:3 Nonionizing [1] - 78:23 nonionizing [5] - 9:13, 68:18, 84:11, 91:7, 136:7 nonsense [1] - 85:16 nonspecific [1] - 83:10 nonthermal [1] - 142:23 nonwhite [1] - 113:22 normal [2] - 97:7, 97:12 normally [1] - 91:13 Norman [1] - 163:16 notarized [1] - 162:9 Notary [5] - 1:16, 3:2, 3:9, 160:2, 161:17 NOTARY [2] - 160:21, 161:16 notary [1] - 163:12 note [1] - 162:2 noted [4] - 113:19, 114:6, 114:16, 161:4 Notes [1] - 2:20 notes [8] - 40:10, 40:14, 40:20, 40:21, 44:21, 125:22, 126:2, 126:5 nothing [6] - 49:24, 116:18, 149:16, 153:12, 153:22, 160:5 Notice [1] - 2:9 notice [6] - 3:23, 16:11, 16:21, 22:14, 41:1, 151:13 notwithstanding [1] - 50:1 November [2] - 40:17, 126:24 nowhere [1] - 74:16 NTP [3] - 110:13, 110:24, 136:16 nuclear [3] - 61:1, 61:2, 136:6 Number [3] - 22:9, 84:17, 116:10 number [26] - 10:18, 13:22, 16:14, 28:17, 29:20, 32:22, 32:23, 42:19, 58:23, 73:15, 75:17, 82:10, 82:15, 82:16, 82:21, 83:15, 89:5, 96:11, 102:12, 108:24, 114:24,</p>	<p>114:25, 115:21, 129:8, 136:13, 162:5 numbers [4] - 30:14, 104:6, 117:16, 117:24</p>
O					
<p>oath [4] - 3:8, 3:12, 4:10, 4:11 object [3] - 53:2, 56:20, 155:5 objected [2] - 56:20, 134:24 objection [1] - 155:25 objective [2] - 71:2, 71:3 objectively [1] - 69:12 observation [2] - 35:24, 73:19 observed [1] - 95:6 obviously [16] - 6:4, 31:10, 35:20, 49:24, 55:4, 68:13, 68:15, 86:23, 87:24, 99:9, 106:1, 120:3, 124:17, 128:12, 149:21, 153:2 occasion [1] - 19:1 occasionally [1] - 21:6 occasions [4] - 7:2, 15:22, 19:4, 20:18 occupational [1] - 76:1 occur [3] - 98:15, 129:15, 135:11 occurred [1] - 82:3 October [3] - 122:8, 122:9, 155:24 OF [2] - 1:1, 1:13 off/on [1] - 97:12 offering [1] - 6:10 office [2] - 10:15, 76:15 Office [5] - 68:21, 70:13, 71:15, 71:17, 71:19 offices [1] - 8:6 official [4] - 74:7, 78:16, 79:6, 139:19 officially [2] - 49:16, 49:18 offs [1] - 32:5 often [4] - 60:22, 61:3, 86:19, 120:15 old [2] - 21:7, 21:9 older [1] - 66:15 omitted [1] - 162:7 on/off [1] - 97:8 once [3] - 41:24,</p>					

123:24, 134:13
one [127] - 4:23, 6:1, 6:17, 7:20, 12:4, 13:14, 15:2, 15:21, 16:10, 18:7, 18:25, 19:1, 21:8, 23:1, 23:4, 23:25, 24:4, 24:17, 26:7, 26:24, 27:13, 30:7, 30:23, 30:25, 31:2, 32:10, 32:18, 32:22, 34:10, 36:11, 36:20, 37:12, 37:25, 40:14, 43:4, 43:7, 43:23, 44:12, 45:21, 45:22, 47:4, 48:2, 48:14, 49:7, 50:22, 50:23, 51:12, 51:16, 53:24, 54:19, 55:1, 58:5, 58:13, 61:5, 61:21, 63:10, 69:13, 71:7, 73:1, 75:9, 78:24, 83:4, 83:7, 85:4, 85:23, 87:6, 91:18, 92:24, 93:20, 94:2, 95:11, 96:14, 97:19, 100:24, 103:9, 104:21, 104:23, 107:25, 108:6, 108:7, 108:18, 108:20, 109:17, 110:4, 110:8, 110:10, 110:13, 110:19, 111:9, 112:15, 112:24, 113:19, 113:20, 115:12, 115:24, 116:16, 116:17, 118:6, 119:2, 120:9, 121:17, 123:5, 123:15, 128:6, 128:25, 130:22, 132:15, 133:18, 133:24, 138:7, 140:5, 140:12, 140:18, 144:18, 145:5, 146:21, 146:23, 150:1, 152:14, 155:13, 157:14
one-page [1] - 150:1
one-third [1] - 113:20
ones [5] - 11:8, 20:20, 30:25, 131:6, 142:25
ongoing [1] - 12:5
ons [2] - 31:19, 32:4
open [4] - 55:13, 68:2, 157:7, 157:22
open-access [1] - 55:13

operate [1] - 98:7
operating [2] - 97:7, 97:11
opinion [19] - 29:25, 30:4, 34:7, 34:9, 35:1, 35:18, 39:12, 39:15, 71:16, 98:19, 99:5, 99:8, 101:6, 105:20, 112:25, 137:7, 138:14, 139:12, 139:17
opinions [11] - 6:10, 27:25, 28:1, 106:24, 110:6, 112:14, 135:10, 149:18, 158:14, 158:19, 158:20
opportunity [1] - 151:8
opposed [1] - 24:25
opposition [1] - 85:24
opt [3] - 99:25, 126:7, 134:16
OR [1] - 161:16
oral [1] - 121:24
order [6] - 26:8, 26:16, 110:25, 148:8, 148:10, 148:17
ordered [2] - 132:16, 148:19
ordering [1] - 148:11
orders [4] - 56:15, 59:24, 150:4, 156:11
organ [1] - 9:8
organization [9] - 12:4, 12:8, 70:16, 71:23, 74:1, 78:15, 78:16, 149:10, 154:13
Organization [19] - 60:24, 74:2, 74:5, 74:8, 74:10, 74:19, 74:25, 75:3, 75:16, 75:17, 76:18, 77:2, 78:6, 81:20, 81:21, 82:5, 85:12, 111:5, 149:12
organizations [3] - 12:5, 55:12, 79:22
organize [1] - 10:25
organizing [1] - 42:17
oriented [1] - 79:3
original [4] - 28:5, 96:12, 114:1, 163:13
originally [4] - 11:16, 43:23, 79:1, 90:17
outcome [9] - 10:13, 10:16, 29:12, 48:6, 51:14, 52:10, 53:10, 118:21, 160:13

outcomes [2] - 62:8, 77:17
outputs [1] - 93:13
outside [6] - 68:12, 86:19, 98:13, 108:15, 133:13, 146:10
ovens [1] - 85:13
overlap [1] - 129:25
overpower [1] - 91:24
overwhelming [2] - 65:7, 142:4
own [6] - 54:14, 64:19, 73:19, 116:18, 130:5, 135:20
owned [1] - 136:3
oxidative [12] - 96:3, 96:7, 141:20, 141:22, 142:6, 142:14, 143:12, 145:5, 145:15, 145:20, 146:2
oxygen [41] - 61:14, 61:16, 61:22, 68:18, 84:5, 88:7, 89:10, 89:13, 89:20, 90:21, 90:23, 90:25, 91:6, 91:10, 91:13, 91:20, 92:17, 92:22, 93:7, 93:18, 93:23, 93:25, 94:10, 94:13, 94:17, 94:24, 95:14, 96:4, 96:16, 127:7, 141:5, 141:7, 141:12, 142:6, 142:9, 142:18, 143:23, 144:1, 145:20, 146:1, 146:16

P

p.m [5] - 80:24, 140:16, 159:2
P.O [2] - 163:1, 163:17
page [45] - 17:2, 24:7, 25:14, 25:15, 25:17, 25:18, 25:24, 26:1, 26:2, 26:3, 40:20, 40:21, 43:24, 86:3, 102:18, 103:3, 103:5, 103:11, 103:14, 104:5, 105:10, 105:12, 113:15, 122:8, 123:19, 127:6, 137:22, 138:4, 138:5, 148:9, 149:8, 149:9, 150:1, 151:20, 151:24, 152:3, 152:6,

152:12, 153:16, 156:3, 162:5, 162:9, 162:10, 163:12, 163:13
PAGE [2] - 2:2, 161:1
Page/Line [1] - 162:14
pages [5] - 43:13, 150:21, 151:19, 161:3
paid [2] - 14:21, 18:1
pain [3] - 40:16, 75:20, 126:20
panel [2] - 24:14, 147:11
paper [17] - 27:14, 28:20, 33:14, 34:23, 35:25, 54:5, 81:22, 85:11, 90:13, 94:12, 105:4, 108:14, 110:2, 115:14, 118:6, 118:10, 153:16
papers [7] - 28:19, 35:13, 37:18, 38:14, 75:9, 78:12, 96:11
paragraph [15] - 17:2, 86:4, 103:4, 103:18, 104:3, 104:18, 114:3, 115:4, 116:3, 120:9, 124:8, 124:25, 126:15, 155:14, 156:5
paragraphs [2] - 123:20, 124:1
parameters [1] - 143:8
paraphrase [1] - 59:10
parenthetical [1] - 103:5
Part [2] - 2:10, 2:11
part [26] - 6:18, 11:3, 20:1, 24:15, 27:25, 54:3, 54:9, 57:1, 68:7, 68:19, 77:4, 77:5, 79:20, 80:7, 80:8, 82:5, 91:15, 95:23, 111:4, 116:8, 132:18, 134:11, 135:12, 135:24
partial [3] - 127:19, 137:18, 137:25
Partial [1] - 2:18
participation [1] - 113:21
particular [20] - 9:25, 11:24, 14:13, 38:1, 38:5, 39:13, 52:12, 52:14, 63:13, 71:23, 84:15, 94:7, 94:9, 99:11, 99:20, 108:14, 116:19,

139:2, 140:2, 151:13
particularly [16] - 31:19, 31:24, 32:12, 33:24, 34:16, 35:20, 37:1, 63:14, 87:20, 97:13, 111:2, 128:1, 153:23, 154:18, 157:17, 157:24
partly [1] - 37:11
parts [2] - 73:5, 134:23
Passariello [1] - 51:3
past [2] - 3:25, 146:17
pathological [1] - 83:16
patient [2] - 14:6, 108:20
patterns [1] - 137:4
Paul [1] - 6:25
pay [7] - 36:22, 64:23, 100:1, 100:6, 124:4, 126:10
PCB [1] - 130:14
PCBs [12] - 13:22, 47:18, 60:21, 60:25, 61:24, 130:9, 130:12, 135:12, 135:15, 136:23, 137:3, 137:8
peace [1] - 49:23
peak [2] - 88:13, 88:16
peaks [4] - 87:22, 87:25, 88:17, 89:23
peer [11] - 10:5, 29:19, 54:5, 69:10, 69:17, 72:23, 72:25, 73:2, 73:3, 73:6, 141:19
peer-reviewed [10] - 10:5, 29:19, 54:5, 69:10, 69:17, 72:23, 72:25, 73:2, 73:6, 141:19
penalized [1] - 38:18
pendency [1] - 16:13
pending [1] - 156:10
penetrate [4] - 68:10, 86:21, 86:22, 133:10
Pennsylvania [6] - 46:12, 46:20, 50:10, 50:21, 50:25, 51:13
people [71] - 10:18, 24:14, 30:6, 30:7, 30:10, 30:18, 31:25, 32:5, 32:24, 33:3, 33:19, 34:5, 34:7, 34:13, 34:20, 34:24, 35:7, 40:6, 42:17, 42:19, 61:12, 64:4, 69:20, 69:23, 71:1, 71:12, 74:3, 74:20,

<p>75:5, 75:11, 79:2, 79:3, 79:4, 80:19, 81:19, 84:14, 87:19, 89:5, 89:16, 90:6, 91:22, 92:4, 92:9, 92:11, 93:1, 93:8, 96:1, 96:6, 96:8, 97:20, 108:24, 109:8, 110:20, 114:1, 114:25, 121:6, 121:18, 125:8, 133:23, 134:19, 134:23, 135:19, 136:7, 137:1, 142:8, 144:10, 145:7, 154:2, 154:25</p> <p>people's [1] - 29:23</p> <p>per [13] - 56:15, 56:19, 57:13, 58:2, 59:21, 60:1, 60:9, 60:13, 64:8, 64:13, 67:11, 67:12, 74:12</p> <p>percent [10] - 29:16, 30:3, 32:3, 34:2, 34:3, 35:7, 35:11, 101:14, 101:18, 121:6</p> <p>percentage [3] - 30:15, 98:20, 101:23</p> <p>perfectly [1] - 32:9</p> <p>performed [1] - 69:2</p> <p>perhaps [4] - 35:23, 43:15, 110:9, 141:9</p> <p>period [22] - 15:19, 38:15, 38:21, 40:22, 79:17, 79:18, 87:15, 90:4, 99:16, 100:4, 100:13, 100:19, 101:2, 101:10, 101:13, 101:16, 101:24, 112:18, 113:13, 116:13, 116:16, 145:1</p> <p>periods [8] - 40:6, 97:17, 110:21, 115:1, 115:23, 117:9, 129:14, 131:20</p> <p>permission [1] - 133:22</p> <p>person [25] - 14:7, 14:16, 17:16, 18:17, 31:2, 31:11, 54:25, 55:3, 62:9, 68:24, 70:2, 78:24, 93:17, 99:7, 108:6, 108:7, 108:18, 121:12, 125:5, 139:8, 139:21, 140:6,</p>	<p>147:23, 160:13</p> <p>personal [5] - 60:20, 71:7, 73:19, 86:13, 136:21</p> <p>personally [3] - 11:4, 11:19, 161:19</p> <p>personnel [2] - 62:25, 124:18</p> <p>persons [1] - 32:12</p> <p>persuade [3] - 71:12, 74:15, 81:20</p> <p>pertain [4] - 37:9, 49:4, 83:18, 129:17</p> <p>pertained [1] - 48:22</p> <p>pertaining [3] - 13:11, 19:17, 20:9</p> <p>petri [3] - 58:16, 58:19, 58:20</p> <p>Ph.D [1] - 6:2</p> <p>phenomena [1] - 95:6</p> <p>phenomenon [4] - 92:8, 92:25, 93:17, 95:3</p> <p>Phillips [1] - 155:10</p> <p>phone [22] - 33:20, 63:22, 63:23, 63:25, 65:2, 65:4, 65:6, 65:9, 74:6, 82:10, 86:5, 92:19, 93:5, 93:9, 110:15, 110:23, 126:5, 128:8, 128:20, 134:6, 138:10, 144:23</p> <p>Phone [1] - 127:21</p> <p>Phones [1] - 148:21</p> <p>phones [5] - 65:16, 110:20, 134:5, 149:13, 149:14</p> <p>phonetic [4] - 152:9, 153:22, 155:11</p> <p>photon [1] - 61:21</p> <p>phrased [1] - 101:4</p> <p>physician [5] - 5:20, 31:10, 71:9, 90:14, 108:21</p> <p>physician's [1] - 71:11</p> <p>physicists [1] - 79:1</p> <p>physiology [1] - 9:7</p> <p>piece [2] - 128:1, 157:7</p> <p>pigs [1] - 143:18</p> <p>pillow [1] - 64:3</p> <p>place [2] - 30:11, 133:20</p> <p>placed [2] - 86:19, 121:10</p> <p>plaintiff [4] - 6:24, 46:17, 46:18, 81:4</p> <p>Plaintiff [2] - 1:7, 1:21</p>	<p>plaintiffs [1] - 70:25</p> <p>plan [1] - 5:12</p> <p>plants [1] - 143:13</p> <p>plausible [1] - 96:21</p> <p>plenty [1] - 120:12</p> <p>plow [1] - 102:10</p> <p>plowing [1] - 127:13</p> <p>plus [1] - 44:20</p> <p>point [28] - 4:19, 6:22, 9:20, 25:12, 81:18, 85:4, 85:10, 85:20, 94:6, 98:20, 105:15, 106:20, 110:16, 115:24, 116:22, 116:25, 127:15, 129:16, 141:8, 141:15, 143:20, 143:21, 145:13, 146:14, 151:10, 151:15, 152:3, 152:15</p> <p>pointed [1] - 4:21</p> <p>points [2] - 6:9, 85:18</p> <p>policies [3] - 12:19, 72:3, 72:4</p> <p>policy [2] - 9:6, 63:11</p> <p>Policy [1] - 55:18</p> <p>pollution [2] - 58:8, 58:9</p> <p>polychlorinated [2] - 60:21, 130:7</p> <p>poor [1] - 92:24</p> <p>poorer [1] - 115:5</p> <p>poorly [1] - 101:4</p> <p>poorly-phrased [1] - 101:4</p> <p>population [6] - 29:16, 30:3, 30:6, 30:16, 34:2, 84:13</p> <p>portion [1] - 100:11</p> <p>portions [2] - 123:4, 123:11</p> <p>Portland [2] - 53:15, 163:17</p> <p>posed [1] - 42:4</p> <p>poses [1] - 52:7</p> <p>position [13] - 63:10, 71:21, 74:23, 75:6, 76:11, 76:13, 76:19, 76:24, 77:7, 77:8, 77:25, 78:3, 80:12</p> <p>positive [2] - 28:23, 143:11</p> <p>possibility [3] - 65:5, 76:22, 101:7</p> <p>possible [3] - 111:8, 113:25, 149:13</p> <p>possibly [4] - 40:1, 115:7, 115:8, 157:10</p> <p>potential [1] - 135:10</p>	<p>potentially [6] - 4:16, 4:20, 63:16, 113:20, 157:7, 157:22</p> <p>Powell [2] - 154:7, 154:10</p> <p>POWER [1] - 1:9</p> <p>power [22] - 8:16, 8:22, 24:25, 47:6, 47:10, 47:14, 49:11, 49:12, 50:14, 50:17, 50:20, 51:3, 51:16, 51:21, 53:23, 77:19, 89:1, 89:7, 102:22, 105:24, 136:2, 136:4</p> <p>Power [9] - 3:19, 68:24, 70:2, 104:23, 124:4, 153:15, 153:17, 153:18, 163:6</p> <p>powerful [4] - 28:12, 28:14, 28:15, 29:1</p> <p>PowerPoint [1] - 153:21</p> <p>PPL [1] - 46:14</p> <p>practice [1] - 13:3</p> <p>practiced [1] - 13:1</p> <p>practicing [1] - 5:20</p> <p>pre [1] - 62:19</p> <p>pre-wireless [1] - 62:19</p> <p>precautionary [1] - 139:4</p> <p>preclude [1] - 64:18</p> <p>preexisting [1] - 120:18</p> <p>prefiled [3] - 23:22, 122:15, 154:20</p> <p>prepare [3] - 76:6, 121:23, 122:23</p> <p>prepared [7] - 25:11, 101:6, 101:7, 101:12, 102:5, 148:13, 153:12</p> <p>preparing [4] - 121:21, 121:22, 122:17, 137:10</p> <p>presence [1] - 108:3</p> <p>present [5] - 3:5, 67:20, 78:12, 79:15, 123:17</p> <p>presentation [1] - 150:7</p> <p>presented [3] - 23:14, 70:3, 72:21</p> <p>presenting [4] - 9:14, 23:14, 75:11, 154:25</p> <p>presents [1] - 94:10</p> <p>preserve [2] - 20:15, 67:24</p> <p>pretend [1] - 106:6</p>	<p>pretty [7] - 6:15, 66:7, 73:21, 130:25, 137:25, 148:3, 157:3</p> <p>prevalence [1] - 30:1</p> <p>prevent [1] - 71:10</p> <p>prevented [1] - 68:15</p> <p>previous [3] - 28:22, 103:5, 117:14</p> <p>previously [2] - 32:1, 128:23</p> <p>primarily [10] - 8:18, 15:20, 15:22, 24:12, 47:15, 56:24, 78:25, 83:23, 91:5, 143:17</p> <p>primary [3] - 38:24, 64:24, 142:9</p> <p>principle [1] - 15:6</p> <p>print [2] - 119:17, 160:9</p> <p>printed [1] - 23:2</p> <p>printing [1] - 24:16</p> <p>problem [3] - 44:11, 60:6, 109:24</p> <p>problems [6] - 30:7, 62:6, 82:17, 94:19, 94:20, 121:11</p> <p>Procedure [2] - 156:20</p> <p>proceed [1] - 52:23</p> <p>proceeding [7] - 29:13, 69:3, 70:4, 70:10, 120:2, 147:10, 147:11</p> <p>proceedings [4] - 4:15, 42:7, 42:11, 68:23</p> <p>process [5] - 79:12, 79:13, 79:14, 91:15, 92:25</p> <p>produce [4] - 3:22, 143:25, 157:12, 158:12</p> <p>produced [4] - 27:20, 69:7, 157:9, 157:17</p> <p>producing [1] - 93:1</p> <p>product [3] - 54:9, 78:8, 148:19</p> <p>profess [1] - 64:17</p> <p>profession [1] - 71:9</p> <p>professional [1] - 12:24</p> <p>prognosis [1] - 126:22</p> <p>Program [5] - 28:5, 28:9, 28:13, 29:1, 127:20</p> <p>program [2] - 128:10, 136:8</p> <p>progressed [1] - 39:22</p> <p>progression [2] - 126:23, 126:24</p>
--	---	--	--	---

prohibiting [1] - 124:16
project [1] - 154:16
promoted [1] - 74:7
Promotion [2] - 118:11, 118:16
pronounce [3] - 7:10, 38:1, 81:5
properly [4] - 9:17, 121:16, 135:18, 163:13
properly-designed [1] - 121:16
proposed [2] - 46:23, 137:7
proposition [5] - 94:23, 96:20, 112:3, 131:23, 145:24
prostate [2] - 99:18, 99:19
protect [2] - 66:3, 139:20
protected [1] - 91:25
Protection [1] - 78:23
protective [1] - 91:17
proteins [1] - 61:17
protons [3] - 91:2, 91:4, 91:11
provacative [1] - 34:11
prove [3] - 90:2, 115:24, 126:20
proven [3] - 89:25, 90:1, 128:5
provide [14] - 10:1, 10:10, 11:5, 16:1, 40:24, 40:25, 41:3, 41:5, 109:23, 119:8, 119:25, 123:6, 123:23, 156:4
provided [13] - 11:2, 11:8, 11:13, 18:10, 18:13, 38:6, 41:8, 55:13, 109:22, 119:2, 119:3, 123:5, 124:2
provider [1] - 135:7
provides [3] - 93:22, 95:10, 96:20
providing [2] - 15:20, 120:20
province [2] - 147:5, 147:15
provincial [2] - 147:14, 147:19
provisions [1] - 148:11
provocation [2] - 30:21, 108:13
provocative [6] -

31:18, 31:24, 32:5, 32:12, 33:24, 88:6
proximity [1] - 90:7
PSC [1] - 2:17
public [16] - 5:20, 6:2, 6:13, 9:4, 29:10, 42:4, 52:8, 54:4, 55:10, 71:8, 71:9, 71:11, 73:5, 73:22, 139:18, 163:12
PUBLIC [2] - 160:21, 161:16
Public [46] - 1:17, 3:2, 3:9, 15:15, 15:25, 16:13, 18:8, 18:14, 18:17, 18:23, 19:15, 19:18, 20:9, 20:17, 21:25, 23:15, 23:22, 24:21, 29:3, 29:8, 41:16, 41:17, 42:6, 46:12, 47:22, 48:14, 48:17, 50:25, 55:18, 68:22, 70:3, 70:14, 71:15, 71:18, 71:20, 81:15, 120:2, 120:21, 125:15, 131:24, 136:1, 148:2, 148:25, 153:14, 160:2
Public/Attorney [1] - 161:17
publication [3] - 13:7, 33:2, 118:16
publications [5] - 10:5, 36:10, 80:17, 96:13, 143:11
published [22] - 13:6, 13:18, 24:10, 28:7, 35:13, 54:5, 54:11, 56:21, 67:8, 69:9, 69:17, 69:18, 72:19, 72:25, 73:4, 73:7, 73:16, 76:3, 93:14, 93:16, 109:5, 134:9
PUC [10] - 21:3, 27:7, 119:9, 119:12, 126:4, 149:18, 154:22, 154:23, 156:19, 158:15
pull [5] - 22:20, 25:2, 41:8, 115:19, 148:4
pulse [2] - 97:25, 98:1
pulses [11] - 87:8, 87:9, 87:10, 87:11, 87:15, 88:4, 90:18, 97:8, 97:13, 97:22, 98:5
purpose [1] - 63:14
purposes [3] - 37:8, 123:22, 151:18

push [1] - 56:18
put [16] - 24:13, 25:12, 32:18, 33:5, 47:7, 51:21, 65:9, 80:10, 86:10, 121:5, 129:16, 133:17, 134:25, 136:8, 154:3, 155:19

Q

qualified [1] - 49:1
qualify [1] - 138:17
quality [3] - 64:5, 102:22, 106:15
Quebec [4] - 49:14, 50:2, 146:23, 147:5
questions [9] - 5:3, 6:20, 21:21, 37:12, 44:1, 52:23, 151:20, 158:3, 158:22
quickly [1] - 54:17
quite [15] - 6:18, 7:3, 10:22, 28:20, 29:22, 34:23, 38:13, 49:19, 68:16, 70:18, 73:15, 95:9, 115:16, 126:15, 153:1
quote [3] - 32:8, 100:9, 149:11
quoted [1] - 139:23
quoting [2] - 120:6, 149:21
Québécoise [1] - 147:21

R

R-e-a [2] - 109:3, 109:4
rabbits [1] - 143:21
radiating [2] - 102:23, 104:14
radiation [56] - 8:19, 9:13, 23:11, 28:25, 34:8, 36:6, 45:25, 52:16, 59:4, 59:13, 62:21, 64:21, 64:25, 66:13, 66:19, 66:20, 66:25, 68:4, 68:5, 68:7, 68:11, 74:11, 74:20, 78:2, 84:8, 84:11, 85:9, 86:20, 91:7, 91:8, 91:9, 94:11, 94:22, 95:13, 95:18, 95:21, 96:15, 101:20, 108:13, 108:15, 109:9, 128:13, 129:5, 131:17, 133:9,

136:7, 138:9, 141:4, 141:11, 141:22, 142:5, 145:11, 145:15, 145:19, 146:17, 154:18
Radiation [7] - 22:11, 22:24, 26:11, 26:20, 74:9, 78:23, 127:21
radicals [2] - 61:14, 61:16
radio [4] - 62:1, 65:22, 66:6, 152:7
radiofrequencies [1] - 35:3
Radiofrequency [5] - 22:11, 22:23, 118:11, 118:17, 127:21
radiofrequency [77] - 8:18, 8:20, 8:22, 11:19, 14:6, 23:11, 27:18, 28:25, 30:8, 30:19, 31:8, 31:20, 34:22, 35:9, 36:6, 36:13, 38:20, 45:24, 48:22, 53:1, 57:3, 59:13, 61:13, 61:21, 62:21, 64:20, 64:25, 66:13, 66:19, 66:20, 66:23, 66:25, 67:6, 67:20, 67:25, 68:9, 68:11, 69:25, 71:13, 76:15, 78:2, 84:11, 85:9, 87:25, 94:11, 95:12, 95:18, 95:21, 96:15, 104:1, 104:13, 105:17, 105:24, 107:9, 108:12, 109:9, 110:8, 111:8, 111:21, 111:24, 112:4, 128:5, 129:2, 129:12, 131:17, 138:9, 141:4, 141:11, 141:22, 142:5, 145:11, 145:14, 145:19, 145:25, 152:17, 152:23, 154:17
RAE [1] - 157:10
rail [1] - 47:7
railroad [5] - 47:11, 51:16, 51:19, 51:20, 51:25
Ramazzini [2] - 110:16, 128:16
range [4] - 36:12, 36:13, 67:13, 144:11
rapid [14] - 31:18, 32:4, 88:6, 88:10,

88:21, 89:5, 89:15, 89:19, 90:11, 90:15, 97:8, 97:12, 120:15, 138:18
rapidly [1] - 86:7
rare [2] - 14:2, 127:4
rat [1] - 144:22
rate [5] - 113:2, 115:23, 118:14, 128:4, 152:12
rated [1] - 111:7
rates [1] - 130:7
rather [3] - 36:25, 124:14, 148:14
rational [1] - 62:13
rats [4] - 127:23, 128:12, 143:15, 143:17
Ray [1] - 109:2
RAY [1] - 109:2
re [1] - 50:20
RE [1] - 163:6
re-route [1] - 50:20
Rea [10] - 34:10, 34:23, 35:15, 108:23, 109:1, 109:15, 155:13, 157:10, 157:13, 158:6
reach [1] - 59:8
reactions [1] - 73:23
reactive [42] - 61:14, 61:16, 61:22, 68:17, 84:4, 88:7, 89:10, 89:13, 89:20, 90:21, 90:23, 91:2, 91:6, 91:10, 91:13, 91:20, 92:16, 92:22, 93:7, 93:18, 93:23, 93:24, 94:10, 94:13, 94:17, 94:24, 95:14, 96:4, 96:16, 127:7, 141:5, 141:7, 141:12, 142:5, 142:9, 142:18, 143:22, 143:25, 144:1, 145:20, 146:1, 146:16
read [20] - 25:20, 38:9, 41:4, 43:9, 43:14, 44:7, 63:1, 73:24, 78:12, 100:8, 100:11, 126:15, 139:24, 150:14, 156:5, 156:8, 161:2, 161:4, 163:11
reading [2] - 63:19, 67:16
READING [1] - 163:9
reads [1] - 114:4

<p>ready [1] - 119:10</p> <p>real [2] - 40:2, 74:15</p> <p>realistic [1] - 57:3</p> <p>reality [4] - 89:3, 89:17, 90:2, 90:5</p> <p>realize [2] - 30:8, 133:18</p> <p>really [32] - 10:3, 10:19, 26:17, 30:5, 30:14, 31:11, 34:11, 36:20, 37:12, 49:19, 55:3, 55:6, 56:2, 65:17, 65:25, 66:14, 67:18, 70:23, 75:6, 85:11, 90:2, 98:25, 106:6, 113:24, 119:8, 135:14, 138:2, 140:24, 140:25, 144:4, 146:8, 158:8</p> <p>Reason [1] - 162:14</p> <p>reason [16] - 35:16, 35:17, 35:19, 63:2, 63:4, 65:24, 79:14, 92:12, 92:14, 92:18, 101:1, 122:4, 130:4, 130:16, 130:25, 162:6</p> <p>reasonable [4] - 101:8, 101:12, 102:5, 131:16</p> <p>reasonably [1] - 31:10</p> <p>reasoning [1] - 151:12</p> <p>reasons [5] - 36:21, 55:1, 111:9, 128:6, 161:6</p> <p>rebuttal [5] - 150:19, 150:23, 151:5, 151:9, 151:14</p> <p>recalled [1] - 53:3</p> <p>recalling [1] - 46:8</p> <p>recap [1] - 37:5</p> <p>receive [2] - 21:6, 107:1</p> <p>received [2] - 17:22, 45:1</p> <p>recent [7] - 18:7, 27:13, 45:16, 45:21, 45:22, 109:1, 110:4</p> <p>recently [3] - 45:17, 66:16, 77:21</p> <p>reception [2] - 10:17, 87:6</p> <p>receptors [2] - 61:1, 61:2</p> <p>recognize [2] - 18:12, 23:7</p> <p>recollect [1] - 56:2</p> <p>recollection [4] - 50:22, 121:22,</p>	<p>123:13, 147:14</p> <p>recommendation [2] - 56:12, 67:15</p> <p>Recommendations [1] - 55:18</p> <p>recommendations [5] - 55:23, 56:6, 56:7, 56:9, 148:16</p> <p>reconvened [5] - 4:7, 21:18, 41:13, 80:24, 140:16</p> <p>record [7] - 3:17, 43:9, 43:14, 125:21, 150:14, 156:18, 160:10</p> <p>recording [1] - 69:14</p> <p>records [2] - 19:17, 39:16</p> <p>recover [1] - 114:1</p> <p>recurrence [3] - 113:2, 113:12, 129:14</p> <p>red [1] - 10:22</p> <p>reduce [8] - 36:7, 62:17, 62:24, 64:6, 66:2, 71:12, 131:20, 134:15</p> <p>reduced [6] - 36:16, 38:15, 99:14, 101:3, 108:17, 160:8</p> <p>reduces [1] - 65:5</p> <p>reduction [2] - 72:1, 129:18</p> <p>reevaluated [1] - 80:3</p> <p>refer [5] - 30:21, 87:17, 113:16, 122:14, 122:17</p> <p>reference [8] - 25:14, 26:8, 106:7, 110:2, 122:12, 122:20, 123:6, 123:15</p> <p>Reference [1] - 2:12</p> <p>referenced [2] - 108:22, 163:10</p> <p>references [10] - 24:24, 26:7, 27:7, 36:2, 43:25, 72:10, 120:10, 122:5, 123:7, 123:10</p> <p>referred [7] - 26:18, 26:20, 27:24, 40:6, 73:10, 83:10, 149:18</p> <p>referring [5] - 18:23, 40:20, 141:17, 148:24, 152:7</p> <p>refers [1] - 105:16</p> <p>reflect [2] - 113:22, 139:11</p> <p>reflected [2] - 8:11, 113:4</p> <p>reflecting [1] - 16:12</p>	<p>refuse [1] - 75:6</p> <p>refused [3] - 47:9, 74:23, 75:14</p> <p>refute [1] - 73:16</p> <p>regard [9] - 6:19, 30:24, 71:10, 73:7, 77:6, 78:1, 98:19, 137:5, 158:16</p> <p>regarded [1] - 73:11</p> <p>regarding [3] - 71:17, 99:5, 140:18</p> <p>regeneration [1] - 84:4</p> <p>regret [1] - 118:6</p> <p>regularly [2] - 9:5, 21:1</p> <p>regulatory [3] - 41:18, 42:1, 72:18</p> <p>Regulatory [1] - 153:9</p> <p>related [8] - 39:24, 60:19, 65:8, 89:6, 89:9, 89:12, 99:13, 127:23</p> <p>relation [7] - 28:8, 30:13, 88:25, 99:14, 130:9, 130:11, 131:15</p> <p>relationship [2] - 114:21, 119:7</p> <p>relationships [1] - 152:4</p> <p>relative [1] - 98:3</p> <p>relatively [2] - 90:18, 102:25</p> <p>relevance [1] - 84:24</p> <p>relevant [19] - 27:14, 31:19, 35:23, 37:24, 94:9, 111:18, 112:24, 116:1, 124:17, 128:1, 129:9, 129:11, 142:3, 144:3, 144:15, 146:9, 154:8, 154:19, 155:20</p> <p>reliance [1] - 151:25</p> <p>relied [4] - 148:25, 149:16, 153:23, 158:1</p> <p>remained [1] - 33:9</p> <p>remains [1] - 78:17</p> <p>remember [10] - 12:22, 37:25, 46:4, 51:2, 70:9, 111:6, 119:25, 120:3, 123:4, 147:10</p> <p>remembering [1] - 94:20</p> <p>remission [29] - 36:7, 36:16, 37:21, 38:3,</p>	<p>38:9, 38:13, 38:15, 40:6, 40:8, 99:13, 99:16, 99:23, 100:5, 100:14, 100:20, 101:2, 101:9, 101:10, 101:14, 101:16, 101:24, 112:18, 116:13, 116:16, 117:10, 129:18, 131:20</p> <p>remote [1] - 107:2</p> <p>removed [2] - 33:9, 134:12</p> <p>Repacholi [12] - 25:16, 25:21, 26:4, 26:9, 26:18, 26:24, 28:3, 28:5, 28:20, 74:4, 76:14, 150:8</p> <p>repeat [3] - 36:8, 68:3, 118:13</p> <p>replaced [1] - 135:1</p> <p>replicate [4] - 116:8, 116:14, 117:6, 118:4</p> <p>replicated [3] - 34:18, 34:19, 117:11</p> <p>replication [1] - 117:18</p> <p>Report [29] - 2:12, 2:16, 11:11, 23:7, 24:1, 24:3, 24:10, 53:17, 53:22, 54:9, 54:18, 54:21, 55:17, 56:12, 64:10, 67:10, 72:8, 72:13, 72:16, 73:8, 73:12, 73:17, 80:11, 81:23, 103:8, 139:5, 148:23, 151:21, 153:25</p> <p>report [65] - 9:16, 23:10, 24:5, 31:17, 33:3, 35:17, 35:23, 36:3, 40:16, 53:23, 55:8, 55:21, 58:14, 58:25, 72:16, 72:20, 72:22, 73:8, 73:23, 76:6, 85:2, 102:11, 102:18, 103:2, 103:7, 104:17, 105:9, 107:25, 108:3, 108:4, 108:5, 111:5, 112:13, 115:4, 116:9, 118:7, 121:8, 121:18, 121:21, 121:23, 121:24, 122:2, 122:5, 122:18, 122:23, 123:1, 123:9, 123:12, 123:14, 123:16, 123:17, 123:18,</p>	<p>124:20, 125:2, 125:6, 125:7, 126:24, 126:25, 127:19, 128:17, 148:15, 149:7, 154:1, 154:16</p> <p>reported [11] - 22:23, 33:14, 116:7, 117:7, 120:24, 121:3, 128:23, 143:11, 154:2, 160:8</p> <p>Reported [2] - 2:11, 22:10</p> <p>REPORTER [3] - 145:16, 145:21, 149:5</p> <p>Reporter [1] - 160:22</p> <p>reporter [1] - 100:12</p> <p>REPORTING [2] - 1:25, 163:1</p> <p>reporting [1] - 121:5</p> <p>reports [12] - 35:22, 56:22, 69:18, 73:13, 86:16, 90:5, 104:21, 104:22, 121:2, 137:13, 151:22, 151:24</p> <p>reproductive [1] - 82:1</p> <p>request [2] - 3:23, 119:24</p> <p>requested [1] - 16:11</p> <p>requests [1] - 120:1</p> <p>require [1] - 66:24</p> <p>requires [1] - 5:1</p> <p>requiring [1] - 8:8</p> <p>Research [5] - 26:11, 26:20, 111:4, 128:4, 135:24</p> <p>research [9] - 6:5, 11:12, 13:11, 14:14, 60:20, 65:21, 136:21, 136:22, 136:23</p> <p>residential [3] - 47:8, 50:18, 52:1</p> <p>resources [2] - 9:25, 10:1</p> <p>respect [2] - 55:23, 151:19</p> <p>respective [1] - 161:6</p> <p>respond [1] - 34:25</p> <p>responded [1] - 90:15</p> <p>response [10] - 3:22, 40:25, 75:10, 114:21, 118:20, 119:6, 120:16, 152:4, 152:21, 153:4</p> <p>responses [5] - 75:8, 119:24, 120:1,</p>
---	--	---	---	--

<p>121:18, 151:23 responsible [1] - 118:2 rest [5] - 87:9, 124:11, 125:17, 125:19, 129:1 result [5] - 78:7, 92:4, 93:18, 117:21, 134:8 results [16] - 6:21, 9:22, 29:22, 42:20, 69:14, 92:15, 110:23, 110:24, 115:7, 115:8, 117:11, 121:1, 121:17, 137:2, 143:9, 144:13 resume [1] - 5:15 retention [1] - 115:23 retired [1] - 74:5 retires [1] - 78:24 return [2] - 162:9, 163:13 Review [2] - 2:13, 84:18 review [15] - 11:6, 27:5, 28:19, 42:24, 67:8, 74:15, 75:7, 76:4, 121:20, 122:2, 122:19, 141:2, 150:2, 150:8, 155:19 reviewed [22] - 10:5, 29:19, 39:16, 42:12, 42:21, 54:5, 66:16, 68:20, 69:1, 69:10, 69:17, 72:23, 72:25, 73:2, 73:4, 73:6, 80:2, 109:21, 123:1, 137:1, 141:19, 149:17 reviewing [2] - 71:2, 151:13 reviews [3] - 54:6, 151:22, 151:23 revised [1] - 23:4 revision [2] - 24:2, 24:9 revisit [1] - 157:22 RF [36] - 14:17, 27:8, 27:12, 36:12, 37:9, 52:15, 56:8, 74:11, 86:6, 86:15, 89:23, 93:24, 94:22, 94:25, 96:21, 97:1, 102:20, 103:15, 106:14, 112:9, 120:14, 130:21, 130:22, 130:25, 131:13, 132:11, 134:12, 135:11, 140:2, 142:1, 142:13,</p>	<p>145:1, 146:17, 150:4, 151:16, 151:17 RFR [6] - 2:11, 141:21, 142:23, 143:12, 144:2 Richard [3] - 46:14, 122:15, 155:13 ridiculous [1] - 100:2 right-hand [2] - 23:18, 26:4 right-of-way [1] - 47:10 Rights [1] - 18:13 ringing [2] - 83:3, 83:7 rise [3] - 57:8, 88:6, 88:10 rises [7] - 88:21, 89:5, 89:15, 89:19, 90:11, 90:15, 138:19 risk [37] - 13:23, 14:1, 37:3, 52:8, 52:15, 58:5, 59:14, 60:8, 60:13, 62:4, 66:25, 72:6, 82:11, 84:13, 89:6, 98:15, 98:18, 99:2, 99:7, 100:21, 110:21, 114:7, 114:17, 121:14, 127:1, 130:16, 131:18, 132:9, 132:10, 132:12, 132:15, 132:19, 132:21, 132:23, 133:3, 136:11, 148:20 risks [5] - 14:16, 63:12, 83:21, 126:21, 151:18 road [1] - 12:23 rodents [2] - 110:7, 136:16 role [2] - 8:7, 54:3 roll [1] - 8:21 rolled [1] - 50:1 rollout [2] - 29:4, 52:6 room [4] - 77:3, 107:1, 108:11, 108:16 ROS [4] - 95:10, 95:18, 126:24, 127:6 roughly [3] - 30:2, 34:1, 79:25 Roundup [1] - 13:25 route [1] - 50:20 routed [1] - 50:17 router [1] - 134:10 RPR [4] - 1:16, 3:2, 160:2, 160:20 Rules [2] - 156:19, 156:20</p>	<p>rural [1] - 50:19</p> <p style="text-align: center;">S</p> <p>Safe [1] - 48:23 safe [10] - 49:21, 56:8, 56:23, 57:17, 59:19, 60:22, 62:13, 78:1, 139:3 safety [2] - 41:19, 139:9 Sage [7] - 24:12, 25:11, 53:23, 55:2, 55:19, 56:11, 80:18 Sage's [1] - 54:24 salt [1] - 121:4 Salt [2] - 50:23, 51:1 Sam [1] - 87:20 samples [1] - 96:1 sanctity [1] - 80:20 save [1] - 20:15 saw [4] - 8:11, 77:18, 118:20, 123:14 scan [3] - 43:15, 44:20, 158:7 scanned [1] - 45:2 scavenge [1] - 92:21 scavengers [1] - 91:21 School [8] - 2:18, 47:23, 48:11, 52:18, 108:10, 124:12, 124:18, 137:19 school [2] - 6:16, 53:15 schools [1] - 63:5 schwann [2] - 110:17, 110:18 schwannoma [1] - 128:14 schwannomas [3] - 110:18, 111:16, 128:11 science [7] - 54:25, 55:4, 71:22, 72:17, 77:1, 77:3, 151:12 Sciences [1] - 79:20 scientific [16] - 69:10, 71:2, 71:6, 72:4, 72:23, 73:4, 74:15, 75:7, 75:12, 77:15, 78:3, 78:9, 78:11, 92:3, 101:1, 116:6 Scientific [1] - 55:17 scientifically [2] - 32:4, 131:13 scientist [1] - 144:18 screen [1] - 125:10 screwed [1] - 91:2 seal [3] - 75:23, 91:3,</p>	<p>160:16 search [2] - 17:6, 17:9 searched [2] - 20:22, 20:25 searching [1] - 17:11 second [3] - 86:3, 87:16, 124:8 seconds [4] - 87:9, 101:25, 102:3, 102:7 Section [3] - 54:20, 55:16, 55:20 section [7] - 79:10, 83:17, 123:18, 123:25, 124:8, 124:19, 150:5 See [1] - 120:18 see [51] - 10:23, 17:2, 17:4, 21:14, 21:15, 23:18, 25:16, 26:3, 26:5, 26:16, 27:5, 28:21, 32:19, 35:13, 35:15, 41:7, 41:10, 41:23, 44:6, 45:17, 47:18, 48:21, 51:5, 55:22, 61:23, 71:16, 74:24, 76:11, 76:21, 81:13, 88:23, 92:1, 94:13, 95:5, 102:10, 103:20, 109:14, 109:16, 113:17, 121:16, 122:12, 123:2, 127:14, 141:3, 143:3, 143:6, 144:20, 147:8 seeing [3] - 16:15, 70:7, 103:2 seem [1] - 48:9 select [1] - 36:2 selected [3] - 80:9, 80:11, 80:15 selection [4] - 113:4, 113:23, 113:24, 114:2 self [9] - 33:14, 75:4, 78:25, 80:9, 80:11, 120:24, 121:3, 121:8 self-appointed [1] - 78:25 self-report [1] - 121:8 self-reported [4] - 33:14, 120:24, 121:3 self-selected [2] - 80:9, 80:11 send [5] - 44:9, 44:20, 156:24, 157:21, 158:7 sending [1] - 155:6 senior [1] - 75:2 sensation [1] - 30:13 sense [5] - 5:1, 67:17,</p>	<p>72:17, 90:12, 152:5 sensitive [7] - 11:19, 30:7, 33:10, 33:19, 34:5, 34:16, 91:22 sensitivities [3] - 120:13, 120:16, 120:18 Sensitivity [1] - 109:17 sensitivity [2] - 30:1, 92:20 sent [10] - 4:5, 16:25, 21:22, 22:5, 22:6, 22:16, 104:19, 105:2, 137:23, 138:1 sentence [15] - 68:3, 100:8, 103:17, 104:8, 104:10, 104:12, 105:14, 105:16, 106:21, 114:4, 114:8, 114:11, 116:2, 116:3, 139:22 separate [1] - 71:6 sequence [1] - 31:21 series [2] - 61:20, 136:12 serious [2] - 65:2, 100:3 seriously [1] - 140:7 serve [4] - 19:18, 63:13, 155:23, 156:13 Service [7] - 29:3, 29:8, 41:17, 47:22, 48:14, 48:17, 136:1 Session [1] - 153:9 set [2] - 59:9, 114:1 sets [1] - 129:1 setting [3] - 57:11, 60:16, 148:12 settled [1] - 52:19 settlement [2] - 15:3, 136:1 settlements [1] - 8:7 seven [2] - 102:14, 136:9 seventh [1] - 105:4 several [8] - 7:4, 8:5, 31:17, 44:3, 76:5, 93:12, 112:2, 131:6 shadow [1] - 115:25 sham [1] - 118:22 sham-exposed [1] - 118:22 SHEET [1] - 162:1 sheet [6] - 162:2, 162:8, 162:10, 163:12, 163:12, 163:13</p>
--	--	--	---	--

sheet(s) [1] - 161:8 shield [1] - 108:15 shielded [1] - 108:12 Shkolnikov [1] - 154:6 short [2] - 6:11, 139:5 shortened [1] - 112:19 shortening [1] - 116:16 shorter [4] - 38:21, 113:2, 113:13, 116:12 shortly [1] - 115:14 shots [1] - 125:10 show [5] - 36:13, 112:16, 116:12, 142:22, 145:7 showed [1] - 109:8 showing [1] - 70:1 shown [1] - 130:2 shows [3] - 29:17, 115:15, 143:9 sic [2] - 100:4, 157:10 sic) [1] - 118:10 side [2] - 69:19, 70:16 sideways [1] - 25:19 sign [3] - 162:8, 163:12 signal [3] - 67:21, 86:18, 106:15 signals [6] - 68:1, 87:7, 88:4, 104:9, 107:6, 107:9 signature [6] - 122:8, 161:21, 162:9, 162:10, 163:12, 163:13 SIGNATURE [1] - 161:1 Signature [1] - 162:23 significance [10] - 6:20, 81:17, 94:6, 96:18, 104:12, 105:15, 110:5, 112:14, 114:8, 127:24 significant [7] - 60:12, 77:14, 86:17, 105:19, 114:5, 114:15, 134:7 significantly [3] - 118:22, 118:23, 133:10 SIGNING [1] - 163:9 signs [1] - 30:16 similar [12] - 5:23, 8:10, 13:25, 53:16, 61:23, 95:4, 110:11, 136:23, 137:5, 144:2, 146:6, 152:18 similarities [1] - 137:2	similarity [1] - 129:25 similarly [2] - 80:11, 80:12 simple [2] - 64:4, 102:25 simply [1] - 20:21 sine [15] - 87:21, 87:22, 87:25, 88:3, 88:5, 88:8, 88:14, 88:15, 88:17, 88:20, 89:2, 89:16, 89:18, 89:23, 90:18 single [2] - 116:15, 141:1 site [1] - 32:18 sits [1] - 65:13 sitting [2] - 45:12, 153:13 situation [11] - 8:9, 34:13, 35:14, 49:16, 51:18, 52:9, 61:24, 108:11, 111:19, 137:9, 146:10 situations [1] - 9:14 six [2] - 111:7, 158:17 sixth [1] - 26:1 skeptical [2] - 77:11, 121:8 skip [2] - 24:18, 82:15 skipped [1] - 48:2 sleep [1] - 64:3 slightly [2] - 142:16, 143:7 slower [1] - 118:14 small [3] - 28:7, 117:16, 117:24 smaller [1] - 28:18 smart [125] - 8:16, 8:19, 31:20, 31:21, 31:24, 32:11, 32:21, 32:24, 33:5, 33:8, 33:17, 33:24, 35:4, 35:10, 35:20, 37:13, 38:19, 41:19, 42:18, 46:25, 47:5, 49:5, 49:14, 49:21, 49:25, 51:5, 51:7, 51:10, 55:24, 56:3, 62:20, 62:23, 63:2, 63:12, 64:7, 66:5, 69:4, 70:3, 85:2, 85:5, 85:19, 85:22, 85:24, 86:1, 86:4, 86:7, 86:12, 86:17, 86:19, 87:2, 88:4, 89:14, 89:24, 90:3, 90:7, 90:9, 93:19, 93:20, 94:1, 94:25, 95:1, 95:5, 96:22, 97:6, 97:11, 97:18, 98:4,	98:6, 98:10, 98:12, 98:23, 99:3, 99:9, 99:22, 101:19, 103:25, 104:3, 104:18, 107:2, 107:5, 107:6, 112:25, 120:15, 121:5, 121:10, 126:18, 126:20, 126:25, 133:1, 133:5, 133:8, 133:10, 133:12, 133:15, 133:17, 133:25, 134:3, 134:16, 135:2, 135:5, 138:11, 142:13, 142:20, 144:3, 144:5, 144:7, 144:9, 144:10, 144:15, 145:1, 145:10, 146:1, 146:3, 146:5, 146:10, 146:13, 146:18, 147:13, 151:17, 152:18, 154:3, 154:8, 154:10, 156:11 Smart [4] - 104:4, 122:13, 126:7, 153:24 smoking [2] - 8:9, 71:13 social [2] - 63:10, 72:3 society [2] - 59:4, 139:19 solely [1] - 54:9 Solutions [1] - 153:17 someone [14] - 6:19, 10:14, 37:15, 46:19, 63:1, 64:22, 69:5, 120:6, 121:9, 133:19, 150:7, 151:15, 152:16, 154:15 sometimes [2] - 77:8, 97:17 somewhat [5] - 5:23, 53:19, 56:10, 62:9, 137:5 somewhere [5] - 23:2, 38:3, 59:2, 71:1, 125:7 sooner [2] - 5:8, 38:12 sorry [23] - 14:12, 16:19, 22:5, 22:13, 22:15, 28:7, 40:19, 43:5, 48:9, 49:25, 57:19, 58:17, 68:3, 78:18, 83:13, 102:12, 113:7,	118:13, 121:25, 138:2, 145:16, 147:21, 150:16 sort [17] - 11:7, 24:23, 33:20, 49:22, 55:20, 75:23, 76:2, 76:18, 79:12, 81:23, 89:4, 97:7, 115:24, 125:10, 125:13, 136:23, 148:4 sounds [2] - 73:19, 123:4 source [7] - 26:20, 65:2, 65:25, 99:21, 113:25, 120:8, 134:7 sources [8] - 8:20, 64:20, 64:24, 65:15, 65:23, 86:6, 86:15, 120:14 space [1] - 97:25 spaced [1] - 153:16 speaker [2] - 63:25, 65:4 speaking [1] - 151:10 specialty [1] - 5:20 species [40] - 61:15, 61:16, 61:22, 68:18, 84:5, 88:7, 89:11, 89:13, 89:20, 90:21, 90:23, 91:6, 91:11, 91:13, 91:21, 92:17, 92:22, 93:7, 93:18, 93:23, 93:25, 94:11, 94:13, 94:18, 94:24, 95:15, 96:4, 96:16, 127:7, 141:5, 141:7, 141:12, 142:6, 142:9, 142:19, 143:23, 144:1, 145:20, 146:1, 146:16 specific [14] - 26:9, 29:21, 34:25, 53:1, 54:7, 67:15, 73:3, 92:9, 92:11, 121:9, 124:16, 146:18, 148:12, 150:5 specifically [14] - 11:8, 13:13, 13:18, 14:3, 14:16, 34:24, 56:2, 84:14, 93:20, 94:1, 94:9, 95:1, 107:24, 146:18 specifics [2] - 8:3, 37:1 spectrum [4] - 34:22, 68:8, 68:19, 140:10 speed [1] - 86:10 spell [1] - 11:21 spend [2] - 15:5, 18:4	spends [1] - 134:1 sperm [1] - 94:15 Springvale [1] - 163:2 square [4] - 56:15, 57:13, 58:3, 60:1 squared [9] - 56:19, 59:7, 59:22, 60:9, 60:14, 64:9, 67:12, 67:13, 74:12 staff [5] - 10:19, 12:8, 12:16, 15:9, 148:16 staked [2] - 76:19, 80:12 stand [2] - 17:12, 58:25 standard [7] - 56:14, 57:6, 58:3, 59:9, 60:17, 64:13, 78:1 standards [5] - 56:16, 60:23, 60:24, 136:20 standing [1] - 144:10 stands [1] - 74:9 start [7] - 26:12, 45:4, 45:16, 45:21, 93:15, 101:11, 130:20 started [1] - 12:22 starting [2] - 123:19, 137:22 starts [1] - 103:14 State [7] - 1:17, 3:2, 15:20, 135:22, 135:24, 160:3, 161:17 state [18] - 7:5, 7:23, 8:5, 8:7, 8:12, 12:11, 12:18, 22:4, 41:18, 42:1, 97:10, 107:18, 115:16, 116:11, 134:23, 136:3, 136:20, 141:9 state's [1] - 29:4 state-owned [1] - 136:3 statement [9] - 27:15, 29:22, 36:8, 56:22, 69:15, 102:18, 118:3, 124:3, 132:2 statements [3] - 105:23, 106:8, 161:20 states [12] - 7:4, 7:9, 7:15, 7:19, 7:20, 7:22, 10:21, 10:22, 10:23, 12:11, 34:23 States [1] - 11:25 STATES [1] - 1:1 static [1] - 6:20 stations [1] - 33:20 statistically [3] - 60:12, 114:5, 114:15
--	---	--	--	--

<p>statistics [1] - 6:17</p> <p>status [2] - 79:7, 81:21</p> <p>steal [1] - 91:11</p> <p>stenographically [1] - 160:8</p> <p>steps [4] - 62:16, 66:2, 134:10, 134:14</p> <p>still [8] - 21:4, 21:6, 30:4, 56:20, 86:17, 117:16, 117:24, 119:10</p> <p>strain [1] - 127:23</p> <p>strange [2] - 91:22, 137:9</p> <p>strangest [1] - 49:15</p> <p>strength [1] - 9:23</p> <p>strengthens [1] - 158:18</p> <p>strengths [1] - 9:18</p> <p>stress [9] - 96:3, 96:7, 142:6, 142:14, 143:12, 145:5, 145:15, 145:20</p> <p>strike [2] - 101:10, 130:20</p> <p>strong [10] - 60:16, 65:7, 65:10, 67:1, 67:6, 78:14, 99:8, 131:1, 131:3, 131:6</p> <p>stronger [3] - 77:16, 111:9, 132:4</p> <p>strongest [1] - 28:3</p> <p>strongly [4] - 132:6, 134:24, 138:7, 139:22</p> <p>structure [1] - 125:14</p> <p>structures [2] - 102:23, 104:14</p> <p>student [2] - 53:8, 154:16</p> <p>students [8] - 9:15, 9:17, 9:21, 10:2, 10:7, 15:8, 154:17</p> <p>studied [5] - 30:12, 131:4, 131:10, 131:15, 131:22</p> <p>studies [62] - 9:14, 9:15, 9:16, 9:19, 23:9, 28:8, 28:17, 29:23, 30:17, 30:21, 32:17, 34:11, 37:8, 37:19, 56:25, 57:9, 57:11, 57:24, 69:2, 70:1, 70:7, 95:8, 96:10, 111:2, 111:10, 112:16, 117:3, 118:5, 119:8, 129:17, 129:19, 130:2, 130:5,</p>	<p>135:12, 135:17, 136:12, 136:17, 136:25, 141:2, 141:4, 141:6, 141:20, 141:25, 142:2, 142:12, 142:16, 142:24, 143:1, 143:2, 143:15, 144:14, 145:6, 145:19, 145:23, 146:3, 146:15, 151:13, 152:8, 157:16</p> <p>Studies [1] - 127:20</p> <p>study [90] - 5:24, 13:6, 13:19, 14:15, 28:4, 28:6, 28:9, 28:13, 29:1, 30:5, 30:23, 31:1, 31:2, 31:7, 31:9, 32:19, 32:20, 34:10, 34:12, 34:13, 34:17, 35:16, 35:17, 68:20, 68:21, 69:8, 69:9, 69:12, 94:1, 96:9, 108:1, 108:13, 108:18, 108:23, 108:25, 109:1, 109:8, 110:7, 110:10, 110:13, 110:16, 110:24, 111:12, 111:23, 112:14, 113:4, 113:5, 113:17, 113:21, 114:22, 114:24, 115:2, 115:10, 115:17, 115:22, 115:24, 116:7, 116:11, 116:12, 116:14, 116:15, 116:23, 117:12, 117:13, 117:15, 117:17, 117:18, 117:22, 118:3, 118:19, 119:6, 121:9, 121:16, 128:9, 128:25, 129:8, 136:16, 136:17, 140:18, 140:25, 141:1, 144:14, 144:19, 145:13, 157:12, 157:13, 158:7</p> <p>Study [1] - 2:16</p> <p>stunning [1] - 157:24</p> <p>style [1] - 54:12</p> <p>subcommittee [2] - 19:1, 19:10</p> <p>subject [8] - 13:7, 19:3, 31:10, 41:19,</p>	<p>67:9, 80:17, 119:23, 143:8</p> <p>subjected [1] - 79:1</p> <p>subjects [3] - 75:18, 114:25, 115:21</p> <p>submit [1] - 79:23</p> <p>submitted [3] - 27:6, 73:6, 120:1</p> <p>subscribe [1] - 160:15</p> <p>subsequently [1] - 54:5</p> <p>substance [4] - 65:25, 86:22, 161:5, 162:3</p> <p>substantial [1] - 66:18</p> <p>substantiated [1] - 30:20</p> <p>substantive [1] - 158:21</p> <p>succeed [1] - 71:4</p> <p>suddenness [1] - 86:11</p> <p>suffer [1] - 32:12</p> <p>suffered [1] - 121:6</p> <p>suffering [2] - 14:7, 93:17</p> <p>suffers [2] - 39:6, 83:1</p> <p>sufficient [2] - 112:4, 130:1</p> <p>sufficiently [2] - 107:14, 144:2</p> <p>suggested [3] - 67:11, 127:10, 132:6</p> <p>suggesting [2] - 29:20, 76:17</p> <p>suggestions [2] - 28:22, 125:13</p> <p>suing [1] - 123:23</p> <p>summarize [1] - 112:1</p> <p>summarizes [1] - 83:22</p> <p>summary [3] - 81:24, 155:13, 155:18</p> <p>summer [1] - 135:6</p> <p>sun [5] - 62:1, 68:1, 68:4, 68:5, 68:8</p> <p>super [2] - 82:9, 92:2</p> <p>superimpose [1] - 88:21</p> <p>superimposed [6] - 87:22, 87:25, 88:5, 88:13, 89:19, 90:18</p> <p>superimposition [1] - 89:22</p> <p>supero xide [1] - 91:18</p> <p>supervising [1] - 77:13</p> <p>supply [1] - 92:13</p> <p>support [13] - 10:2, 15:8, 28:10, 38:17, 38:21, 38:24, 94:23,</p>	<p>95:10, 96:12, 96:20, 123:9, 129:20, 145:24</p> <p>supported [3] - 35:12, 117:11, 138:8</p> <p>supportive [1] - 35:18</p> <p>supports [3] - 9:23, 27:24, 112:3</p> <p>Supreme [1] - 153:13</p> <p>surcharge [1] - 124:17</p> <p>surcharges [3] - 124:4, 126:14</p> <p>surprised [2] - 73:22, 73:25</p> <p>Survey [1] - 153:25</p> <p>survey [13] - 42:19, 42:20, 120:18, 120:23, 121:1, 121:2, 121:20, 122:17, 123:6, 133:7, 134:8, 154:4</p> <p>surveyed [2] - 32:21, 154:16</p> <p>surveys [1] - 121:3</p> <p>survival [7] - 114:7, 114:17, 115:5, 116:25, 117:1, 117:2, 117:7</p> <p>suspect [7] - 16:9, 23:25, 46:1, 56:5, 64:12, 98:17, 127:11</p> <p>Svendsen [10] - 2:16, 37:18, 38:24, 115:14, 116:11, 116:21, 116:25, 117:6, 117:23, 118:5</p> <p>Sweden [1] - 116:17</p> <p>Swerdlow [3] - 125:1, 125:3, 125:5</p> <p>SWERDLOW [1] - 125:1</p> <p>swore [1] - 161:19</p> <p>sworn [2] - 3:12, 160:4</p> <p>syllabi [2] - 10:8, 158:9</p> <p>symptoms [23] - 29:17, 31:14, 33:1, 33:9, 33:14, 33:18, 39:22, 39:24, 40:3, 40:13, 40:15, 53:8, 57:25, 83:3, 83:4, 89:21, 108:3, 120:17, 120:24, 126:21, 127:1, 127:3, 139:8</p> <p>syndrome [3] - 84:1, 84:19, 105:5</p> <p>synopsis [1] - 156:9</p> <p>system [6] - 36:5,</p>	<p>79:21, 112:23, 129:24, 136:14, 152:24</p> <p>systematically [2] - 17:10, 30:6</p> <p>systemic [1] - 150:8</p> <p>systems [3] - 9:8, 60:4, 141:23</p>
T				
<p>table [3] - 22:25, 23:1, 143:17</p> <p>Table [5] - 142:25, 143:2, 143:10, 143:17, 144:20</p> <p>tables [2] - 23:1, 23:25</p> <p>Tackover [2] - 11:5, 11:22</p> <p>TACKOVER [1] - 11:23</p> <p>TAINTOR [31] - 3:14, 4:3, 4:9, 21:14, 21:20, 22:19, 41:14, 43:20, 43:22, 45:10, 45:13, 80:25, 100:15, 102:14, 102:16, 102:17, 103:13, 103:17, 103:19, 103:24, 104:2, 105:6, 140:19, 140:20, 145:22, 149:6, 150:25, 155:7, 156:15, 157:2, 159:1</p> <p>Taintor [4] - 1:22, 2:4, 3:16, 163:15</p> <p>Talamone [1] - 153:22</p> <p>talks [7] - 82:10, 104:12, 111:15, 144:22, 149:11, 149:13, 150:7</p> <p>taught [1] - 8:23</p> <p>teach [7] - 6:14, 8:24, 9:2, 9:5, 9:21, 10:8, 158:9</p> <p>Technology [1] - 48:24</p> <p>technology [3] - 49:3, 134:14, 149:15</p> <p>telephone [2] - 54:7, 134:4</p> <p>television [3] - 62:2, 65:22, 134:2</p> <p>temperature [1] - 66:22</p> <p>tendency [1] - 121:11</p> <p>term [3] - 28:15, 87:19, 88:25</p> <p>terms [14] - 30:15,</p>				

<p>31:3, 52:21, 66:10, 76:9, 76:10, 84:10, 90:20, 102:25, 112:14, 116:18, 127:3, 139:17, 144:5</p> <p>terribly [1] - 131:3</p> <p>testicles [1] - 94:18</p> <p>testified [17] - 3:24, 13:20, 14:5, 15:15, 18:21, 18:24, 19:14, 29:2, 41:17, 42:2, 45:18, 45:23, 46:17, 51:9, 52:11, 70:5, 131:25</p> <p>testify [9] - 12:12, 18:17, 18:25, 19:5, 49:17, 51:12, 137:10, 137:12, 160:4</p> <p>testifying [1] - 155:16</p> <p>testimonial [1] - 21:16</p> <p>testimonies [2] - 17:23, 22:3</p> <p>testimony [60] - 4:14, 4:18, 15:20, 15:24, 16:1, 18:13, 21:24, 23:21, 23:22, 27:7, 27:23, 28:16, 29:7, 29:15, 29:25, 41:15, 45:1, 45:16, 45:17, 46:11, 47:15, 47:25, 50:1, 50:16, 52:20, 63:20, 77:18, 97:5, 100:9, 108:9, 121:24, 122:15, 125:14, 130:19, 132:1, 135:9, 137:7, 137:15, 137:18, 147:12, 148:25, 150:6, 150:10, 150:19, 150:24, 151:6, 151:14, 151:19, 152:16, 153:6, 154:5, 154:6, 154:20, 155:1, 155:9, 158:15, 160:11, 161:4, 161:5, 162:3</p> <p>Testimony [4] - 2:10, 2:11, 2:17, 2:19</p> <p>tests [1] - 96:6</p> <p>Texas [1] - 34:10</p> <p>text [1] - 26:10</p> <p>textbook [1] - 10:3</p> <p>THE [10] - 1:25, 22:18, 105:3, 145:16, 145:18, 145:21, 149:5, 150:18, 150:23, 163:1</p> <p>themselves [3] -</p>	<p>28:10, 89:18, 135:1</p> <p>therefore [7] - 11:20, 17:11, 59:6, 62:13, 62:16, 66:1, 161:7</p> <p>thereportinggroupm aine@gmail.com [1] - 163:3</p> <p>they've [1] - 137:14</p> <p>third [4] - 103:2, 105:10, 113:20, 122:12</p> <p>thirty [1] - 163:11</p> <p>threat [1] - 8:15</p> <p>threats [2] - 9:8, 9:10</p> <p>three [14] - 7:19, 19:4, 35:22, 56:15, 80:2, 80:3, 97:23, 104:21, 113:16, 124:5, 147:11, 152:3, 156:3</p> <p>three-page [1] - 156:3</p> <p>threshold [3] - 59:1, 62:7, 98:2</p> <p>throughout [3] - 102:22, 104:13, 105:17</p> <p>Thursday [1] - 151:8</p> <p>tied [1] - 134:4</p> <p>Tim [1] - 3:6</p> <p>tipped [1] - 25:19</p> <p>tissue [7] - 85:9, 95:14, 111:13, 111:25, 112:5, 128:21, 144:9</p> <p>title [3] - 22:21, 71:20, 118:10</p> <p>TO [1] - 161:16</p> <p>tobacco [2] - 8:6, 8:8</p> <p>today [18] - 3:22, 4:11, 4:15, 4:18, 5:16, 5:17, 16:18, 16:21, 18:10, 21:4, 30:2, 39:22, 65:20, 109:22, 109:23, 119:2, 122:1, 139:12</p> <p>today's [2] - 27:21, 40:25</p> <p>together [7] - 8:13, 10:21, 53:25, 80:10, 96:13, 111:2, 161:5</p> <p>top [4] - 23:18, 102:18, 103:14, 105:10</p> <p>total [4] - 66:1, 66:3, 67:13, 71:22</p> <p>totally [11] - 35:12, 42:12, 52:19, 53:12, 57:12, 62:15, 65:3, 68:14, 85:17, 122:3, 144:6</p> <p>tower [6] - 33:19,</p>	<p>46:4, 48:6, 110:11, 138:11, 152:7</p> <p>towers [1] - 65:16</p> <p>toxic [2] - 89:16, 89:24</p> <p>Toxicology [7] - 2:16, 28:4, 28:9, 28:13, 29:1, 127:20, 128:10</p> <p>trace [1] - 53:8</p> <p>track [1] - 47:7</p> <p>tracks [4] - 51:17, 51:20, 51:25</p> <p>traffic [1] - 20:21</p> <p>trained [1] - 55:3</p> <p>transcript [5] - 137:18, 137:25, 161:3, 162:4, 163:11</p> <p>TRANSCRIPT [1] - 163:9</p> <p>Transcript [1] - 2:18</p> <p>transcription [1] - 160:9</p> <p>transferable [1] - 130:3</p> <p>transgenic [3] - 27:2, 27:17</p> <p>Transients [1] - 153:18</p> <p>translate [1] - 61:11</p> <p>transmission [3] - 102:19, 104:11, 105:16</p> <p>transmissions [1] - 103:23</p> <p>transmit [1] - 104:8</p> <p>transmitted [3] - 102:22, 104:13, 106:23</p> <p>traveled [4] - 7:4, 7:15, 8:2, 49:22</p> <p>treatment [1] - 112:19</p> <p>trend [2] - 114:5, 114:16</p> <p>tries [2] - 91:3</p> <p>trigger [1] - 33:18</p> <p>triggered [1] - 120:15</p> <p>triggering [1] - 57:25</p> <p>triggers [3] - 139:8, 141:11, 142:6</p> <p>trouble [1] - 25:3</p> <p>true [39] - 5:25, 12:20, 26:22, 28:2, 34:2, 34:3, 77:7, 77:23, 78:10, 78:13, 84:15, 84:16, 92:10, 93:2, 93:4, 96:23, 97:3, 97:9, 99:3, 99:4, 100:23, 100:24, 107:3, 107:15, 107:16, 112:10, 112:11, 113:8,</p>	<p>122:18, 135:13, 135:14, 140:3, 140:4, 140:7, 140:8, 146:2, 146:3, 160:10, 161:21</p> <p>truth [4] - 160:5, 160:6, 161:20</p> <p>try [17] - 12:11, 25:12, 32:7, 33:15, 58:9, 71:4, 71:5, 71:10, 71:12, 74:15, 76:17, 91:11, 116:13, 117:6, 140:12, 157:21, 158:5</p> <p>trying [17] - 25:22, 26:17, 29:24, 36:24, 37:4, 51:19, 60:10, 69:24, 73:16, 81:20, 100:17, 104:11, 105:14, 105:21, 107:5, 115:19, 122:20</p> <p>tumor [2] - 93:8, 110:18</p> <p>Tumor [2] - 118:10, 118:16</p> <p>tumors [2] - 93:5, 128:23</p> <p>tuned [1] - 73:21</p> <p>turned [3] - 134:6, 134:20, 135:1</p> <p>turns [2] - 30:20, 133:9</p> <p>tv [1] - 66:6</p> <p>twelfth [1] - 110:9</p> <p>twice [1] - 97:18</p> <p>two [19] - 12:4, 19:4, 24:16, 36:10, 37:7, 37:18, 38:14, 46:9, 59:24, 79:22, 106:18, 111:2, 123:20, 123:25, 128:22, 135:25, 149:8, 157:16, 158:9</p> <p>two-page [1] - 149:8</p> <p>types [1] - 143:4</p> <p>typical [1] - 86:4</p> <p>typically [1] - 87:11</p> <p>typo [1] - 162:7</p> <p>typographical [1] - 122:7</p>	<p>ultimately [1] - 38:11</p> <p>unbalanced [2] - 72:13, 72:14</p> <p>uncertainty [1] - 107:18</p> <p>under [14] - 36:21, 64:3, 74:21, 103:25, 104:3, 104:17, 113:15, 123:19, 123:22, 124:1, 126:11</p> <p>underlined [1] - 126:14</p> <p>underlines [1] - 150:3</p> <p>understood [1] - 90:24</p> <p>undue [2] - 52:7, 72:8</p> <p>uniformly [1] - 99:16</p> <p>unique [1] - 120:14</p> <p>UNITED [1] - 1:1</p> <p>United [1] - 11:25</p> <p>University [4] - 8:25, 74:18, 79:10, 79:11</p> <p>university [1] - 21:5</p> <p>unknown [1] - 107:17</p> <p>unless [4] - 38:11, 140:13, 150:12, 150:15</p> <p>unnecessary [1] - 65:3</p> <p>unrealistic [2] - 57:12, 58:12</p> <p>unrelated [1] - 151:14</p> <p>unreliability [1] - 73:12</p> <p>unsafe [6] - 57:18, 57:20, 57:24, 59:19, 60:23, 62:13</p> <p>unusual [1] - 37:13</p> <p>unusually [1] - 90:5</p> <p>up [19] - 22:20, 24:13, 25:2, 32:18, 41:8, 44:19, 49:20, 49:23, 57:11, 63:9, 65:17, 69:20, 91:2, 114:12, 116:11, 117:3, 144:9, 144:10</p> <p>updated [1] - 18:9</p> <p>urging [1] - 8:12</p> <p>urine [2] - 96:1, 96:5</p> <p>USDC [1] - 2:18</p> <p>Utilities [28] - 15:15, 15:25, 16:14, 18:9, 18:15, 18:18, 18:23, 19:15, 19:19, 20:9, 20:17, 21:25, 23:15, 23:23, 24:21, 41:16, 42:7, 46:12, 68:22, 70:4, 81:15, 120:2, 120:21, 125:15,</p>
U				
<p>U.S [5] - 11:17, 56:17, 75:13, 75:24, 116:17</p> <p>U.S./Canada [1] - 136:13</p> <p>Ua [1] - 21:12</p> <p>UAMAIL [1] - 21:12</p>				

131:24, 148:2, 149:1, 153:14 utilities [7] - 8:14, 20:19, 47:7, 62:24, 97:16, 97:22, 133:23 utility [9] - 41:18, 42:1, 46:23, 63:2, 102:20, 107:7, 135:2, 136:3, 153:10 Utility [3] - 46:14, 46:20, 50:25	W Wadsworth [1] - 135:23 Waldenstrom 's [15] - 13:8, 13:12, 13:13, 14:2, 14:7, 14:10, 14:17, 38:10, 40:7, 99:6, 111:22, 112:21, 126:19, 129:22, 130:3 walk [1] - 67:23 walking [1] - 65:10 wants [4] - 44:6, 121:12, 150:12, 156:7 Washington [1] - 7:23 waste [3] - 76:4, 76:5 watching [1] - 134:1 water [3] - 90:24, 91:5, 91:9 watts [2] - 67:11, 67:12 wave [11] - 87:21, 87:22, 88:3, 88:5, 88:8, 88:14, 88:16, 88:17, 88:20, 89:16, 90:19 waveform [1] - 145:10 waveforms [3] - 89:14, 142:20, 146:12 wavelengths [1] - 68:6 waves [5] - 68:9, 87:25, 89:2, 89:18, 89:23 ways [3] - 59:3, 59:4, 72:15 weak [1] - 6:18 wear [1] - 65:12 website [2] - 24:13 week [1] - 65:13 weeks [1] - 135:25 weight [12] - 33:15, 33:16, 71:5, 72:24, 88:9, 114:9, 115:10, 115:11, 115:13, 116:7, 143:6, 146:14 welding [1] - 66:17 well-developed [1] - 91:17 well-documented [1] - 115:20 well-educated [1] - 31:11 well-established [2] - 141:9, 141:14 whatsoever [2] - 39:5, 107:15	whereas [1] - 109:12 whereby [3] - 82:2, 84:3, 142:10 WHEREOF [1] - 160:15 whichever [1] - 58:13 white [1] - 130:10 WHO [13] - 74:14, 74:22, 75:11, 75:20, 75:21, 76:7, 76:15, 78:13, 78:19, 79:6, 79:16, 79:18, 79:22 whole [15] - 18:4, 23:9, 35:11, 39:3, 61:20, 73:13, 74:9, 77:10, 79:16, 83:8, 85:11, 94:15, 125:12, 128:13, 160:5 Wi [15] - 33:19, 48:1, 50:4, 50:5, 53:9, 63:22, 65:16, 132:12, 132:16, 132:20, 132:23, 132:24, 132:25, 137:19, 138:10 Wi-Fi [15] - 33:19, 48:1, 50:4, 50:5, 53:9, 63:22, 65:16, 132:12, 132:16, 132:20, 132:23, 132:24, 132:25, 137:19, 138:10 wide [1] - 120:13 wife [3] - 33:4, 132:17, 134:1 William [2] - 154:5, 155:12 willing [9] - 10:10, 20:3, 20:22, 41:3, 41:5, 101:17, 109:14, 132:11, 133:3 win [1] - 49:2 wire [1] - 63:5 wired [3] - 62:20, 63:3, 65:4 wireless [8] - 58:7, 62:19, 62:22, 63:4, 65:11, 65:14, 94:16, 134:10 wiring [9] - 102:24, 104:15, 105:17, 106:3, 106:5, 106:9, 106:23, 107:10, 107:12 Wisconsin [1] - 154:13 wiser [1] - 57:14 wish [1] - 162:6	within -named [1] - 160:4 WITNESS [6] - 22:18, 105:3, 145:18, 150:18, 150:23, 160:15 witness [9] - 3:24, 15:7, 19:18, 81:14, 154:25, 155:9, 155:23, 156:13, 161:19 witnesses [2] - 6:23, 81:3 woman [4] - 11:4, 11:15, 11:16, 90:14 women [1] - 65:8 won [3] - 47:8, 51:15, 53:12 wondering [1] - 146:21 wood [2] - 86:22, 106:10 wool [1] - 115:19 word [4] - 56:14, 138:20, 162:7 wording [1] - 124:23 Words [1] - 162:14 words [3] - 121:15, 124:11, 162:5 works [1] - 79:19 World [19] - 60:24, 74:2, 74:5, 74:7, 74:10, 74:19, 74:25, 75:2, 75:16, 75:17, 76:18, 77:1, 78:6, 81:20, 81:21, 82:5, 85:12, 111:4, 149:11 world [5] - 57:4, 78:9, 78:11, 79:2, 99:2 worried [1] - 76:20 worse [3] - 107:11, 107:13, 107:14 worsen [1] - 127:3 worsening [3] - 120:17, 126:21, 127:2 wrap [1] - 110:19 write [3] - 36:24, 40:16, 80:19 writing [3] - 41:5, 53:20, 54:3 written [7] - 17:19, 20:13, 42:22, 70:18, 75:10, 124:20, 126:24 wrote [3] - 44:1, 81:22, 107:25	Y Yakymenko [10] - 2:17, 93:22, 94:3, 94:23, 95:16, 96:10, 96:19, 140:18, 140:25, 141:16 year [2] - 111:6, 118:25 years [19] - 3:25, 19:13, 21:6, 29:25, 34:17, 38:4, 46:9, 70:12, 80:3, 80:4, 80:5, 80:13, 102:1, 111:7, 132:3, 132:5, 136:9, 147:16, 158:18 yesterday [6] - 4:5, 22:6, 22:17, 104:19, 105:2, 137:23 York [5] - 7:21, 134:17, 135:22, 135:24, 136:2 yourself [2] - 6:8, 63:20
			Z zero [1] - 61:4 Zoom [1] - 3:1 ZOOM [1] - 1:13	